THE CHEMIST AND DRUGGIST

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Our Country and Colonial Subscribers are requested to furnish the Editor with any trade gossip that they may consider interesting.

Subscribers are requested to observe that, for the future, the receipt of The Chemist and Druggist in a *Green Wrapper* indicates that with that number the term of subscription has expired, and that no further numbers will be sent until the same has been renewed. We issue the notice very respectfully, not that we distrust our Subscribers, but simply because we find it impossible to keep an immense subscription list like that we now have, extending to almost every town in the world, in order without an exact system like this.

Editorial Notes.

THE NEW COUNCIL—TOWN *VERSUS* COUNTRY.

In our last number we called attention to the merits of some of the candidates for the Council to be elected on Wednesday next, and mentioned that until the official list had been issued, we could not with any degree of certainty allude to all. The twenty-seven names will be found on another page, in the report of the proceedings of the April Council.

That there was excited even then an unusual degree of interest was proved by the receipt, at the time our previous article was in type, of a circular from a Committee of the trade in Manchester and the neighbourhood soliciting the votes and co-operation of members of the Pharmaceutical Society for the return of two local gentlemen of high position, Messrs. Brown and Woolley, and stating how desirable it was "that country members who formed about four-fifths of the Society, should exercise their due influence." This circular has been followed by another, concise and to the purpose, from the Leeds members, simply recommending for election *eight* of the provincial, and *six* of the London candidates, and among the former *one* only of the Manchester nominees, Mr. Woolley. Thereupon a second circular is issued from the Manchester Committee, ignoring Leeds and pointing out how much *larger* is the district in which they reside than the metropolis, and how self-denying they are in asking for two seats only. We do not wish to be severe on our Manchester friends, many of whom are ornaments to the Society, but we cannot cease to wonder where the metropolitan district ends if the Manchester district includes Preston and Lancaster, and why Liverpool has not as good a claim to be in the latter as the two towns named.

If Leeds and Manchester are successful in their canvass, the next Council will comprise *twelve* provincial and *nine* London members, a decided majority in favour of the country, and obviously sufficient to exercise "due influence."

We do not imagine that any metropolitan member of the Society would object to four-fifths of the twenty-one seats being occupied by "provincials," provided he felt sure that the work of the Society could be efficiently performed by a body so constituted. He would refer to the record in the *Journal* to see if it showed a regular attendance on the part of former provincial councillors, and would find, as might be expected, that those who can accomplish the journey to London and back with facility in one day attend pretty frequently; not so those who have to give up two or three whole days for this purpose. During the last two years the late Manchester representative held a seat at the Board he was pre-eminently distinguished for his absence, as the *Journal* indicates.

Judging of the future by the past, and supposing the Council constituted as indicated above, can we fairly expect *two-thirds* of the twelve provincial councillors to attend every monthly meeting, and can we hope to secure the presence of *one-third* at the Committee meetings, which the late President told us averaged rather more than one a week? If not, either the business of the Society will come to a dead lock or the London minority will have much more influence than it ever had before.

If we refer to the published proceedings for the past year, and analyse the divisions, we do not in any case find town members voting *exclusively* on one side, and country on the other; and in the divisions on the important patent medicine and poison regulation questions half of the country members voted each way. In the face of these facts we feel that the Manchester Committee is in some degree guilty of special pleading, and is not very generous when it asks for *two* seats without any regard for the distribution of the other *twelve*.

We counsel the constituency to examine the list on their voting paper carefully, to pick out good working men with broad and liberal views, and with a genuine desire for the welfare of the Society, mindful that in most cases the amount of available work any one councillor can perform will probably be in direct proportion to the proximity of his residence to the Council table. Examining the names in this way and starting with the axiom that some good men must be omitted, we should, had we the privilege of a vote, record it in favour of the following fourteen:—

1. Atherton, J. H., Nottingham.
2. Barnes, J. B., London.
3. Betty, S. C., London.
4. Groves, T. B., Weymouth.
5. Haselden, A. F., London.
6. Quiller, C. R., London.
7. Reynolds, R., Leeds.
8. Sanger, W. A., London.
9. Savage, W. D., Brighton.
10. Savory, C. H., London.
11. Stoddart, W. W., Bristol.
12. Sutton, F., Norwich.
13. Williams, J., London.
14. Woolley, G. S., Manchester.

Adding these to the list ballotted in, we should have a Council composed of eleven London and ten provincial members; for all practical purposes a *balance* of power. Mr. Mackay would represent Scotland, Mr. Brady the North of England, Messrs. Atherton, Dymond, and Reynolds the great Midland Counties, Mr. Woolley the North-western, Mr. Sutton the Eastern, Messrs. Savage and Groves the Southern, and Mr. Stoddart the Western.

Our attention has been called to the Quarterly Price-Current and Book of Illustrations which Messrs. S. Maw, Son, and Thompson are now issuing to Surgeons, and we are evidently expected to condemn the policy of the firm in thus endeavouring to cultivate a direct trade with the medical profession. Though we do not like to withhold our thunder when it is demanded, we cannot see why this particular firm should be compelled to trust to the agency of chemists and druggists for the development of a special and important branch of their business. Surgeons will not order their instruments through chemists when they can obtain them direct from the manufacturers, and it must not be forgotten that Messrs. Maw have to compete with some famous instrument makers. By declining to supply the Co-operative Associations with goods, the firm showed their willingness to forego advantages for the sake of principle, but we cannot admit that any principle of legitimate trade is defeated by their determination to extend a special branch of their business in a new direction. We certainly do not think that the method of trading deliberately adopted by a great firm is a fit subject for general discussion in the columns of this journal, which is not the organ of a Trade Union, but of a great free-trading body comprising several distinct classes whose interests are not necessarily coincident. We may state in conclusion that the Price-Current and Book of Illustrations issued to Surgeons by Messrs. S. Maw, Son, and Thompson, merely refer to Surgeons' Instruments and Appliances, and to the Apparatus used in Surgeries.

Mr. Joseph Ince, like good Haroun Alraschid, reserves his power until the proper time arrives for its beneficent manifestation. He has the Caliph's grand way of appearing unexpectedly and setting things right. He delights in master-strokes. By his essay on Pharmaceutical Ethics, read at the Nottingham Conference, he exhausted a subject that was thought to be inexhaustible. Four months ago he offered our own students a prize for translation, and presented the fortunate candidate with the complete works of Chateaubriand in twenty-eight volumes. The task he has now in hand is nothing less than the formation of a grand Collection of Prescriptions for the use of students of Pharmacy. In our report of the last evening meeting of the Pharmaceutical Society, the nature of the work undertaken by our friend is explained. We learn that the first volume of the Society's Collection will contain the prescriptions furnished by Mr. Daniel Hanbury; the second, those contributed by Mr. Charles Savory; the third, those received from Mr. John Mackay, of Edinburgh. We may be quite sure that Mr. Ince will not rest from his labours until he has produced a library of reference which will be of inestimable value to pharmacists.

The muse of Dr. Samuel Johnson saw "panting Time" vainly toiling after Shakespeare. A correspondent of the *Michigan University Medical Journal* now leads us to infer that the immortal poet had actually reached the days of Dr. Otto Liebreich in Therapeutics. The sleeping draught that Friar Laurence gave poor Juliet must have been Chloral Hydrate!

> "Take thou this vial, being then in bed,
> And this distilled liquor drink thou off;
> When presently through all thy veins shall run
> A cold and drowsy humour . . . . . .
> And in this borrow'd likeness of shrunk death
> Thou shalt continue two and forty hours,
> And then awake as from a pleasant sleep."

We shall be glad if chemists and manufacturers will, in the course of the ensuing month, send us samples or descriptions of poison bottles, labels, corks, or any notions whereby the sale of poisons can be rendered more safe. We shall also be obliged if correspondents will give us their views on the practicability of adopting a uniform system in this respect, and of the usefulness of so doing, if practicable.

On the evening of the 6th inst., Sir James V. Simpson died in Edinburgh from disease of the heart, with symptoms of *angina pectoris*. Sir James was born in 1811, and was appointed in 1840 to the Professorship of Midwifery in the University of Edinburgh, for his discoveries in connection with chloroform, which are well known. Numerous honours were conferred upon him. Among these it may be mentioned that in 1853 he was elected Foreign Associate of the French Academy of Medicine; in 1856 he was awarded the Montyon Prize of 2,000f. by the French Academy of Sciences. About the same time he received the Knighthood of the Royal Order of St. Olaf from King Oscar of Sweden. In 1866 he was created a Baronet; in the same year he received the honorary degree of D.C.L. from Oxford. In October last he was presented with the freedom of the city of Edinburgh, in "recognition of his scientific researches and applications of science to the alleviation of human suffering."

In a few days we shall be able to supply handsome proofs for framing of the lithographic portrait of Mr. Morson, which accompanies this number, at 1s. 6d. each, or neatly framed and glazed, 5s. each.

ON ZINC SULPHO-PHENATE.

(*Sulpho-Carbolate of Zinc.*)

BY DR. HAGER.[*]

The preparation of this salt presents no difficulties if pure crystallised phenol (carbolic acid) and pure sulphuric acid (H_2SO_4) are operated on. Equal weight parts of both are digested at about 125° F. for two or three days. When the phenol is pure, a clear, yellowish, thick liquid is obtained, which on cooling deposits conglomerations of crystals (probably uncombined phenol), but which soon congeals to a white crystallised mass. Although all conditions are present to combine all the sulphuric acid with the phenol, yet there remains always, and no matter how long the digestion may be continued, a surplus of about 10 per cent. sulphuric acid. For this reason it is advisable to mix 120 parts of sulphuric acid to every 100 parts of phenol. After two or three days the combination is accomplished, and the mixture is then diluted with ten times its bulk of water. Now twice as much as the quantity of sulphuric acid operated upon, or better, a little more, of dry barium carbonate, is gradually added (to 120 parts H_2SO_4, 245 parts $BaCO_3$). The latter had better be triturated with some water before it is added to the acid. Under evolution of carbonic acid, barium sulpho-phenate is formed, a salt soluble in water and in alcohol. At the same time any excess of free sulphuric acid is neutralised and transformed into barium sulphate. The whole is allowed to stand in a warm place for some hours, and is then filtered through a damp filter; the remainder on the filter is washed with some warm water. The filtered

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[*] Translated from Dr. Hager's *Pharmaceutischer Centralhalle*, No. 1, 1870 (January 6, 1870), by Dr. F. Hoffmann in the *American Journal of Pharmacy*, March, 1870. The notation and nomenclature have been simplified in his reprint.

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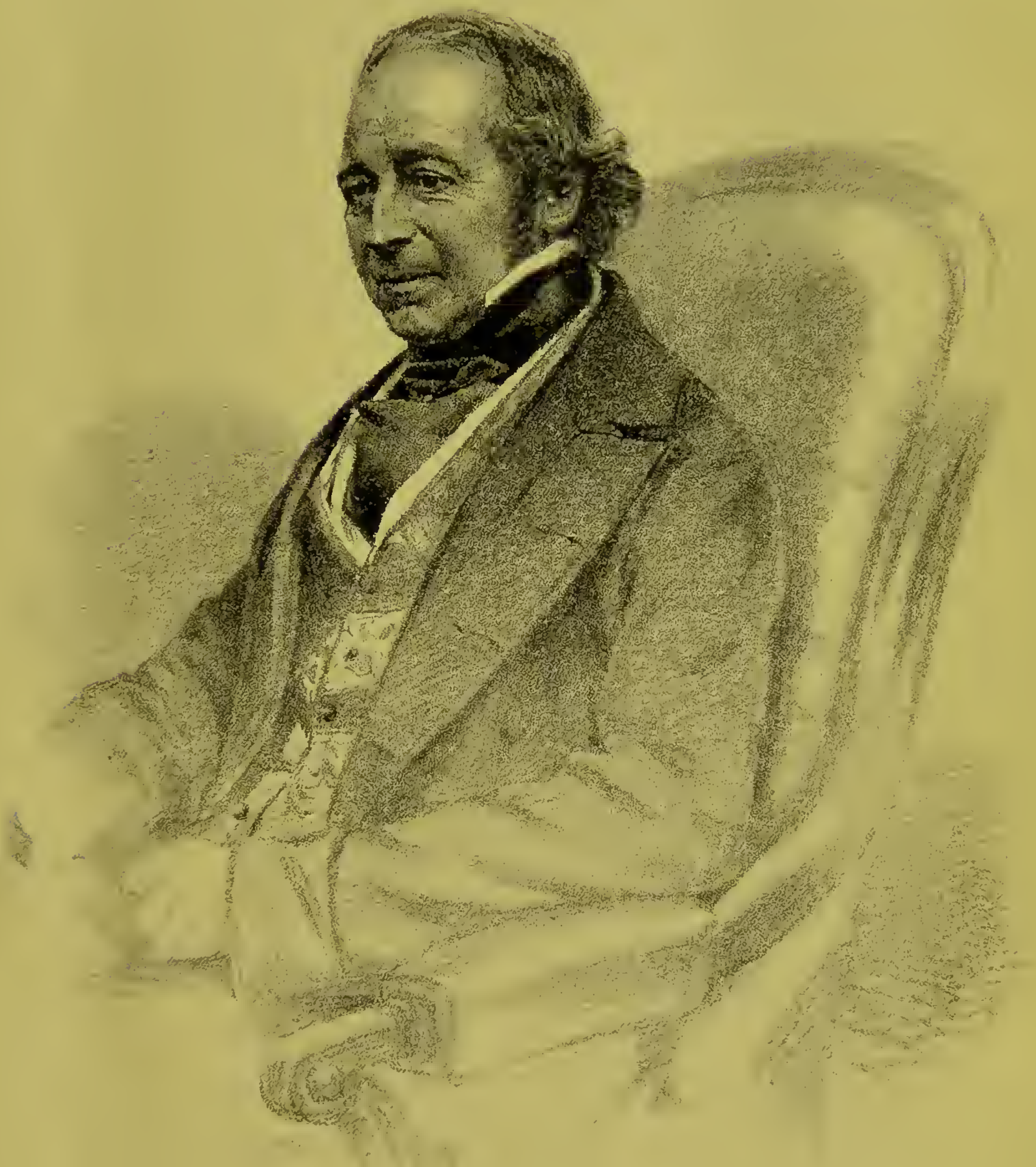

T. N. R. Morson.

Lithographed by Maclure, Macdonald & Macgregor, London from a Photograph by Maull.

solution of barium sulpho-phenate may be evaporated to dryness, whereby it remains behind as a white salt deprived of its water of crystallisation. This is soluble in two parts of water. A small quantity of this barium salt is retained, the balance is dissolved in water in the proportion of 10 parts of the first to 30—40 parts of the latter. To this filtered solution a solution of 6 parts crystallised zinc sulphate in about 18 parts of water is added. Of this zinc solution a small quantity is also retained. Now, after leaving the mixture on the water bath for several hours, about 10 drops of the supernatant solution are diluted in a test-tube with about 100 drops of water; this being divided in two parts, the one is examined with some drops of the retained zinc sulphate solution, the other with the barium sulpho-phenate solution. If any reaction ensues in either case, the one or other of the retained solutions has carefully to be added to the bulk of the solution, in order to accomplish the exact decomposition. A slight excess of zinc sulphate should, however, prevail, so that the barium may be completely precipitated.

Finally, the filtered solution of zinc sulpho-phenate is evaporated under continual stirring until a drop, when allowed to fall on a cold glass plate, congeals to a solid mass. The liquid is then allowed to cool under frequent stirring, and the resulting salt mass is dried in a warm place. When completely dry it forms a white salt.

The evaporation of the solution of the barium sulpho-phenate, its re-solution and the filtration, are only required when a phenol has been operated on which was not palpably pure. When this, however, is the case, the solution of barium sulpho-phenate may be decomposed, without any further operation, by the zinc sulphate solution, with the precaution to retain some of the first solution in order to meet an accidental excess of the zinc solution. For every 100 parts of phenol operated upon, 152 parts of crystallised zinc sulphate may be added, of which only one-twelth may be retained for further addition if required.

The preparation of zinc sulpho-phenate may be facilitated by the use of perfectly pure reagents. When they have been mixed and combined in the above-stated proportions and process, the warm solution, after having been diluted with twice its bulk of water, is gradually neutralised with zinc oxide (free of oxide of iron). When no more oxide is dissolved the warm solution is allowed to cool, and is then filtered; the filtrate is evaporated to nearly half its original bulk, and is then mixed and shaken with ten times its volume of alcohol (90—92 per cent.), and the mixture is allowed to stand in a cool place for several days. The zinc sulphate separates as a powder; the supernatant alcoholic solution of zinc sulpho-phenate may either be directly evaporated to dryness or the alcohol may first be restored by distillation, and the evaporation may then be accomplished. The residue is white zinc sulpho-phenate of a purity that it yields with barium chloride but a slight reaction.

One molecule of phenol, or phenyl-alcohol, reacts with one molecule of sulphuric acid, to form a compound ether, sulpho-phenic acid ($C_6H_6SO_4$). This, when combined with barium, forms $Ba(C_6H_5SO_4)_2$, and, with zinc, the corresponding zinc salt The barium salt, when crystallised from its aqueous solution, forms rhombic crystals, with three proportions of water of crystallisation; the zinc salt, when crystallised, forms bright lamellas, with seven proportions of crystallisation water. The officinal salt derived by exsiccation is deprived of the water of crystallisation; it dissolves in two parts water of medium temperature, and in five parts alcohol of 90 per cent.

The preparation of zinc sulpho-phenate from a not quite pure phenol yields different results. The sulpho-phenic acid is then dark coloured, and the solutions of the salts therewith prepared have a pink colour. The zinc sulpho phenate when crystallised has a pink colour; when desiccated, a reddish tint. This colouration, however, does not at all impair their medicinal value and their therapeutical action.

These more or less coloured solutions of the zinc sulpho-phenate, when near the end of their evaporation, emanate a remarkably fine odour, resembling that of pelargonium. This observation may likely trace to a new source a fine perfume. Some of our most brilliant colours are derived from a similar origin.

Zinc sulpho-phenate combines the therapeutical virtues of zinc sulphate and of phenol. Its solutions for injections is obtained by dissolving 1 part of the salt in 150 to 200 parts water.

ON FILTERED AIR.

BY PROFESSOR TYNDALL, F.R.S.[*]

THE theory of disease was never discussed with more earnestness, or with greater precision, than at the present time. The exact methods pursued in physics and chymistry, both as regards reasoning and experiment, are making their influence felt in medicine and surgery; and they promise, while assigning but narrow limits to our present accurate knowledge, to insure its healthy growth. It is, I think, of capital importance to mark each successive step by which that knowledge is surely and certainly augmented; to detach from the domain of vagueness and uncertainty each successive fragment of demonstrated truth. Now, if the published *data* be correct, it seems to me that such a step has been recently taken with reference to the germ theory of the putrefaction of wounds, and that the evidence in favour of that theory amounts to a physical demonstration of its truth. This result and its basis I propose here to describe and define.

The entrance of air into a wound is the dread of the surgeon. When an abscess is opened he must prevent the air from mingling with the blood-clots if he would avoid putrefaction and its teeming accompaniment of animalcule life. Some eminent London surgeons inform me that they never squeeze an abscess, lest when the pressure is relaxed the air should be sucked in. Now, whence this dreaded power? Is it the air itself that causes putrefaction, or is it something carried mechanically by the air? A follower of Gay-Lussac would affirm the former; a heterogenist would refer the animalcules to "spontaneous generation;" a holder of the germ theory would ascribe the putrefaction to seeds or eggs floating in the atmosphere, and which, when sown upon the wound, sprout into this crop of minute organisms. Do any *data* exist which will enable us to say, with certainty, which party is right? I think so.

It would be very difficult to reduce the putrefying power of pure air, even if it existed, to absolute demonstration; for, however cleansed in appearance, a stubborn objector might still urge that the air was not cleansed in reality; that germs exist, though they baffle our attempts to reveal them. But this difficulty does not hamper the other side; for if, notwithstanding the risk of these residual germs, *visibly pure air* can be proved incompetent to produce the phenomena of putrefaction, there is no escape from the inference that, as regards the point to be decided, such air is perfectly filtered; and its proved impotence would be a demonstration of the truth of the germ theory. By "visibly pure air" I mean air which, where traversed by a powerful and intensely concentrated beam of light, in a space not otherwise illuminated, reveals no trace of floating matter to the eye.

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[*] Contributed to the *Times*, April 7.

How, then, are we to obtain our filtered air, and, having obtained it, how are we to apply it to a wound and mix it effectually with the blood? Two or three years ago an observation and an inference, which, taken together, reflect the highest credit on his sagacity, were made and drawn by Professor Joseph Lister, of Edinburgh. He found, and I believe it is the universal experience of surgery to find, that when the lung is wounded by the spike of a broken rib, air from the pleural cavity may mingle freely with the blood, but that putrefaction never ensues. Here is the statement of Professor Lister, abbreviated, but in his own words :—

> "I have explained to my own mind the remarkable fact that in simple fractures of the ribs, if the lung be penetrated by a fragment, the blood effused into the pleural cavity, though freely mixed with air, undergoes no decomposition. The air is sometimes pumped into the pleural cavity in such abundance that, making its way through the wound, it inflates the cellular tissue of the whole body. Yet this occasions (as regards putrefaction) no alarm to the surgeon. Why air introduced into the pleural cavity through a wounded lung should have such wholly different effects from that entering through a permanently open wound penetrating from without, was to me a complete mystery till I heard of the germ theory of putrefaction, when it at once occurred to me that it was only natural that the air should be filtered of germs by the air passages, one of whose offices is to arrest inhaled particles of dust, and prevent them from entering the air-cells. In truth, this fact in practical surgery, when duly considered, affords as good evidence in support of the germ theory of putrefaction as any experiment that can be performed artificially."*

Here is a surmise which bears upon it the mark of genius, but which nevertheless needs verification. If in the place of the words "it is only natural," we were authorized to write "it is perfectly certain," the demonstration would be complete. Now, this is exactly what experiments with a beam of light enable us to do. One evening towards the close of last year, while pouring various gases across the dust track of a beam in the laboratory of the Royal Institution, the thought occurred to me of displacing by my breath the illuminated dust. I then noticed, for the first time, the extraordinary darkness produced by the air expired towards the end of an expiration. By an intentional effort of expulsion the lungs may be far more effectually emptied of air than by ordinary respiration; and by such an effort, which discharges the air from the interior portion of the lungs into the beam, the darkness is changed to absolute blackness. There is no speck or mote of any kind in such air. It is a true elastic fluid, without a trace of cloud or floating matter.

Thus, by ocular evidence we prove the filtering power of the lungs, and by the experience of surgery we prove the incompetence of air so filtered to produce putrefaction. The germs removed by the process of filtration are therefore the cause of the putrefaction, and its associated phenomena of animalcule life, which was to be demonstrated.

As a guide to the practical surgeon the establishment of this fact is plainly of the very highest importance. Professor Lister now avails himself of the filtering power of cotton wool in treating a numerous class of wounds. He first destroys the germs adherent to the wool, and by a proper lotion he kills those which may be scattered on the flesh. The cleansed wool placed upon the wound permits of a free diffusion of the air, but entirely intercepts the germs, and thus keeps the blood perfectly sweet. It is essential that no matter from the wound should reach the outside air, for such matter would open a highway for the animalcules. I may add that when the foregoing observations on the filtering power of the lungs were made I had no thought, and but little knowledge, of the germ theory. Their value as evidence is enhanced by the consideration that they are absolutely independent of all theoretic bias.*

TARCHIANI AND BILLI'S METHOD OF EMBALMING.†

THE experiments which have recently been made in Italy for the purpose of discovering a method by which animal substances might be embalmed, or attain to a stony consistence by which they might be preserved from natural decay for an indefinite period, have not been confined to Prof. Abbate in Southern Italy; for Messrs. Tarchiani and Billi, of Florence, have also succeeded in imparting a stony consistence to portions of the human viscera, such, for example, as the heart, lungs, liver, and kidneys; these objects have very much the appearance, as well as the hardness of the well-known preparations of Segato, which are to be seen at the Hospital of Santa Maria Nuova, in Florence. The method by which this result was attained it will be remembered was lost to science at the death of the discoverer, as Segato never divulged his secret during his lifetime. Animals, such as cats, dogs, and birds, have also been very well preserved by the present process of Tarchiani, particularly the latter, the feathers not being in the least manner apparently injured by the process of petrifaction, to which they had been submitted; these several preparations, we have been assured by the discoverers, have been embalmed without any of the contained viscera being removed, or touched; the animal, or a portion of the same, is placed in a bath containing the necessary ingredients, which are also stated to be very moderate in price and simple in their application; the same bath, we are also informed, will serve to prepare many objects, and can be kept for a long period without deteriorating or losing any of its original strength. Tarchiani having so far succeeded in petrifying animal substances, which process might be applied to the preservation of anatomical preparations, as well as to objects of natural history, has endeavoured to apply his system to the preservation of meat and poultry, with a view to its application in South America. Several pounds of raw beef were placed in a box containing the antiseptic agent, in the month of August, 1869; the box was then closed, and seals placed upon it in the presence of several witnesses; these same parties were present at the opening of the box in the month of February, 1870 (the seals having been examined to ascertain that they had not been tampered with); the meat was then found to be perfectly free from smell, and was considered to be sound; it was then roasted and eaten by many persons present, and was considered to have acquired a taste as if it had been placed in a strong solution of salt, although not in any manner presenting the appearance that beef acquires when it has remained for some time in pickle; the colour was natural, and the beef entirely free from any odour; the fat had been particularly well preserved; in fact, the beef was considered to be far superior to any meat that might have been placed for the same period (six months) in brine. This first experiment, however satisfactory it may have appeared to be, as a first essay, was not considered sufficiently conclusive by the members of the Committee appointed to examine into the merits of the process, to warrant any report being drawn up for presentation to the Italian Government; consequently a second trial was demanded, and on the 20th of February, 1870, twenty to thirty pounds of raw meat were placed in a box, which was then closed, and sealed by the members of the Committee in the presence of many witnesses; the box was then deposited in safe keeping, to be opened on the 20th of May, 1870, in the presence of the parties who have affixed their seals, when a careful examination of the contents will take place, and a correct report will be made to the Italian Government as to the value of Messrs. Tarchiani and Billi's process.

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* *British Medical Journal*, 1868, p 56

* The black wreaths produced by placing the flame of a spirit lamp underneath the track of a sunbeam may now be clearly though imperfectly seen in every drawing-room in London. The light, save that passing through a single aperture, ought, as far as possible, to be excluded. A candle flame also shows the effect, but very imperfectly.

† From the *Athenæum*, April 9.

A. B. ARCHBALD.

BEET-ROOT SUGAR.

THE *Food Journal* thinks that its readers will feel interest in learning how the beetroot has obtained so much importance, and how it is being utilised. Referring to the large quantity of sugar required to satisfy the wants of the civilised world, and the serious results that would follow from a failure in the supply, a by no means impossible contingency, details are given with reference to the origin of our present supplies. White beet appears to be the particular kind of beet on which the growing trade is founded, its composition being nearly represented as follows:—Water, 83·4; sugar, 10·5; ligneous fibre, 0·8; albumen, casein, etc., 1·5; fatty matter, 0·1; organic substances, 3·7. The objections which have been urged in reference to the British climate are not held very important, the average yield of sugar from English roots being quite equal to that from foreign roots. The use of beetroot as a source of sugar appears advantageous to the farmer, as he is thereby able to obtain double the price for it than if he were to use it for feeding. In the manufacturing process the usual plan is to wash the roots well and reduce them to pulp by means of revolving circular saws. The pulp is packed in linen bags, and the juice squeezed out by hydraulic pressure; the remaining cake can be used for feeding purposes, or for the manufacture of brandy, vinegar, or paper; albuminous substances, etc., are removed by the addition of lime, the juice being heated to a suitable temperature. The tolerably clear liquid is decanted and purified by charcoal filters, and the filtered fluid is submitted to a current of carbonic acid to remove lime, etc.; the latter being filtered off, the clear liquor is evaporated, and the remaining mixture of crystallised sugar and molasses is submitted to the action of the centrifugal machine. The beetroot sugar thus obtained may be subsequently refined. The molasses does not appear available in any way as human food, on account of its nastiness. Reference is made to M. Rousseau's experiments, which appear to have removed many of the difficulties in reference to expense, etc.

THE ULTIMATE ANALYSIS OF PLANTS.

BY GEORGE BROWNEN.[*]

I AM very glad that Proximate Analysis, Botanical Geography, and Agricultural Chemistry, have been introduced in the programme of the session before this evening's subject, and that attention has thus been drawn to the influences of climate and soil on the full development of vegetable substances.

My present subject may be conveniently divided into two parts:—

1. The elementary analysis of plants; and,
2. The elementary analysis of plant-educts.

The elementary analysis of plants is the identification of those substances with which Nature has built up her vegetable structures. All the organic elements have been found in plants—carbon, hydrogen, oxygen, and nitrogen being the most abundant constituents.

When plants are distilled in closed vessels, part of the carbon remains behind with the ash; but this is chiefly the carbon of structure. Acetic acid, methylic alcohol, acetone, and many other carbon products, distil over. Still, if you only want a qualitative test for carbon in vegetable tissues, dry distillation will answer the purpose, for a residue of uncombined carbon will always be found.

Hydrogen enters into the composition of the water necessary for vegetable life, and may be regarded as an essential constituent of organic substances. There is no direct test for its presence in plants. It is therefore sought for, as water, by simply heating the substance, or by a combustion process. The latter plan belongs to the second division of my subject.

Nitrogen exists in the sap, alkaloids, and in other vegetable products, from which it may be obtained by combustion. It is best estimated as ammonia by soda lime and Nessler's test. Lassaigne has given a beautiful and interesting test for nitrogen ("Watts's Dict." vol. i. p. 225). The substance is fused with potassium extracted with water, and boiled with a solution of partly oxidised ferrous sulphate the result is that nitrogen compound, Prussian blue. I do not think it proven that ammonia is a normal constituent of plants, but all nitrogenous substances soon undergo putrefaction and evolve ammonia; this peculiarity distinguishes the nitrogen class, as the non-nitrogenous substances give acid vapours. Without engaging in "the battle of the ferments," we may assert that nitrogenous compounds are specially subject to putrefaction. Some of the alkaloids, albumen, amygdalin, and Russian isinglass, may be taken as examples of these unstable compounds.

Oxygen may be proved to exist in vegetables by the product of the dry distillation oxidising potassium, but its direct estimation is seldom attempted, as the quantity present in a substance can be calculated if the quantities of the other constituents are known. The estimation of oxygen in some plants, as the crucifers and labiates, is a work of great difficulty, and requires extreme care.

Phosphorus generally exists, in combination with oxygen and metals, as phosphates, and these phosphates will be found in the ash to which I shall shortly refer.

Sulphur exists in the sulphates, and chlorine, bromine and iodine in the haloid salts which may be found in the ash. But sulphur exists also in the sulphur oils of the crucifers. Mulder says that iodine may also be found in some of these plants, as for instance, the watercress. When these elements are present in organic compounds, as well as in inorganic salts, they may be oxidised by boiling with nitric acid, and the quantity of the synthetically formed acids must be deducted from the known quantity naturally existing in the salts of the ash. The chief sources of chlorine, bromine, and iodine are sea-plants.

The ashes of vegetables may now be considered. Silica exists in different proportions in most vegetables, being most abundant in the Graminaceæ and Equisetaceæ. Curious and beautiful skeletons of these plants composed of silica may be readily obtained. Silica is distinguished by its insolubility in acids, except hydrofluoric, and by its solubility in alkalies. Phosphates may be dissolved and tested with molybdate of ammonium in nitric acid. The precipitated phospho-molybdic compound may be dissolved, purified, and used as a re-agent for alkaloids (see Proximate Analysis).[*] Sulphates, chlorides, and other salts, may be dissolved and identified by their distinctive tests. The mineral substances of the ash, however, comprise nearly the whole group of the inorganic elements, and are very important in building up the skeleton of plants. Lime, magnesia, and iron, with potash or soda, exist in most plants, the acids generally in combination being sulphuric, phosphoric, or silicic. Succulent plants generally contain large quantities of alkali—in inland plants it is potash, in plants growing near the sea it is soda—but these bases may be artificially changed in either case, or differ even in the same species according to its locality. In the cereals we find a large proportion of earthy salts; and here I may notice those remarkable formations called raphides, found in the Liliaceæ, Cactaceæ, and Polygonaceæ. Of the metals proper, iron, and sometimes manganese, are the chief bases. Dr. Cameron (*Chemical News*, 1862) found lead in plants growing near some lead smelting works in Ireland. Arsenic was found in plants, according to Davy and Horsley, some few years ago, but insufficient evidence was obtained to support their views; on the contrary, other experimenters killed the plants they watered with solutions of arsenic. Spectrum analysis has added to this list of ash compounds, lithium and rubidium. Thallium, discovered by Crookes, in soot, may have been a constituent of primeval vegetation. Vines and violets have been said to contain gold in minute quantity, and copper is said to be an invariable constituent of tobacco. Confervæ and moulds do not yield ash, although they are sometimes produced in metallic solutions. The vegetable acids in solution soon display a love of change, and produce moulds. Alkaloids are not much better, and it is possible that all substances of high chemical formulæ have this tendency: such substances are often very poisonous, as atropine; but Nature, in her efforts to be simple and beneficial, soon breaks up this monopoly of atoms into less hurtful compounds. Decomposition is attended with results that one does not like to look at or smell. It is a passage through death to a new life, and the pangs and throes of dissolution are shocking to the living. Sometimes, like Pandora's box, a decomposing mass scatters deadly disease and other evils. When we discover poisonous matters around us, we assist Nature to change them to less hurtful products. That is what she prompts us to do, and that is why she has made these processes of decomposition so offensive.

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[*] Read before the London Chemists' Association, March 10.

[*] Since this was delivered, M. Kopp has experimented on the use of the precipitated phospho-molybdic acid, and given a plan similar, with slight modifications, to the one which I have adopted.

I now come to the second part of my subject, and must treat of the ultimate analysis of special parts of plants, and the quantitative processes adopted. Of course quantitative estimations may be made of a whole plant. I have put qualitative analysis first, that quantitative analysis might follow with special educts, which are more important to us as pharmacists. Proximate analysis always precedes the estimation of elements. In my former paper I noticed the means adopted for isolating various parts of plants. We must have separated the object of our analysis from its solvent or precipitant, and very carefully purified it by re-solution, crystallisation, and fusion, and brought it to a fixed and true melting or boiling point. These processes are often slow and tedious, and may greatly reduce the quantity of our substance. We cannot help this; we must have purity to ensure correctness of results, and for the same reason, it is necessary that our tests should be quite pure also.

The first attempts at inorganic elementary analysis were made by Gay-Lussac with potassic chlorate. After several modifications the use of this re-agent was abandoned. The method generally adopted now is the following. The substance, pure and free from moisture, is mixed and burnt in a combustion tube with cupric oxide or plumbic chromate, with or without copper turnings, according as the substance contains nitrogen. The decomposing agents require a short notice. Stanford (*Phar. Jour.* vol. xlv., N. S.) gave a plan for obtaining pure cupric oxide. It is generally obtained by dissolving copper in nitric acid, evaporating and calcining the residue in a crucible. The oxide is very hygroscopic, and must be heated before use. It changes carbon into carbonic acid, and hydrogen into water. It has two faults which ought not to be overlooked. Its hygroscopic power causes much trouble, especially when it has not been repeatedly heated. Its granular nature, when over-heated, interferes with its admixture with the substance to be analysed. Copper foil in small pieces, or copper turnings, are used when nitrogen is present; powdered copper is too fine, and reduces carbonic acid. Chromate of lead is best obtained by decomposing lead and potash salts; it is not hygroscopic, like oxide of copper, and has the property of fusing over, and enclosing the substance to be analysed. It is apt, however, to generate nitric oxide.

Combustion tubes are made of Bohemian glass half-an-inch in diameter and eighteen inches long, sealed at one end. The tube is charged—in the copper method—at the end with a layer of copper turnings, and on these a layer of cupric oxide, then with an intimate mixture of, say, five grains of our substance, and fifty grains of cupric oxide, then with a short column of cupric oxide, and lastly, with another layer of copper turnings. The tube thus charged is connected with a chloride of calcium apparatus for absorbing the water produced during combustion, and to this is joined a set of Liebig's bulbs, containing a solution of potassic hydrate for collecting the carbonic acid. Another chloride of calcium tube serves to intercept the moisture of the external air. The combustion tube is now ready for insertion in a suitable combustion furnace. This arrangement is adapted for the analysis of ternary compounds which break up into water and carbonic acid. Should nitrogen be present, it must be collected in a graduated tube over mercury. From the quantities of water and carbonic acid the composition of the substance is deduced.

In substances containing nitrogen, soda-lime has been used, and the nitrogen estimated in the ammonia formed. For substances rich in carbon, plumbic chromate is the best oxidising agent. For liquids a weighed bulb is necessary, and some of the fluid made to enter by heat and condensation; it is then placed at the end of a longer combustion tube or fitted on like a retort behind it. For the decomposing agent, cupric oxide must be used, as plumbic chromate fuses and prevents the passage of the liquid up the tube. With substances containing sulphur, plumbic chromate is generally preferred. If cupric oxide is used, a tube of plumbic oxide must be fixed between the combustion tube and chloride of calcium bulb; plumbic chromate on the other hand retains the sulphur. Substances containing chlorine, iodine or bromine, form the haloid compounds with copper and pass over into the chloride of calcium tube; by using plumbic chromate we can avoid this error. These halogens may be estimated by the plan of Carius ("Watts's Dict." vol. i.), by oxidising with nitric acid as I have before stated. Otto recommends the cupric chromate, and it will succeed in some operations; Schulze by combustion with potassic chromate, and subsequent treatment with phosphorus or mercuric oxide, proposes another form of organic estimation. Schloesing estimates carbon, hydrogen, and nitrogen with oxygen gas and plumbic carbonate; the products are passed through sulphuric acid and potassic hydrate—the first to absorb the water formed; the second the carbonic acid. The oxygen and nitrogen then pass into two absorption bottles, with sheet copper immersed in a solution of ammonium chloride and hydrate, where the oxygen is absorbed and the nitrogen measured.

Other plans have been tried, but I cannot stop to mention them. I have tried in the estimation of nitrogen, metallic aluminium, but not with sufficient success to warrant my proposing it at present.

Having found the compostion of the subject, it is only a work of arithmetic to show its centesimal composition. Then if you have a definite compound, as an alkaloid, by dividing the different products by their equivalents, you obtain without difficulty its empirical formula. When this is done you may be tempted to go a step farther and try and construct its rational formula, which is supposed to show the true grouping of the elements. But as these rational formulæ might lead you far into the realm of fancy—much farther than I wish you to go to-night—I must ask you to stop at a plain statement of analytic results, lest we all confess in a language of a modern poet, that,—

"We are dazed
By the systems upraised
By each master of chemical knowledge,
Who seems to suppose that truth only grows
In the shadow of one little college."

In conclusion, let me say that although this subject may possibly appear dry and tedious, it is really very important. By analysis we have been gradually amassing knowledge respecting the methods by which nature has built up alcohols, acids and ethers; and now by synthesis we are beginning to put together what we had taken apart. Among the organic compounds which have been formed artificially, I may name acetic acid (put together by

Berthelot), alcohol, quinoline (a near relative of quinine), coumarine, and lastly alizarine, the colouring principle of madder. I ought not to forget valerianic acid, which, as a triumph of synthetic skill, is recognised in our British Pharmacopœia.

Where will this end? Will some lucky chemist build up quinine and morphine—snub the monopolists and laugh at bad crops of opium or cinchona? "A slaughter of the innocents," too, has commenced; many of the acids called by the name of the plants yielding them are now classed as malic, citric, or tartaric acids. Many of the principles, too, are going—Dr. Fluckiger killed four at one blow at the Exeter Pharmaceutical Conference, and beeberine, pelosine, buxine, paricine, and chinoidine, are now recognised as but one principle. Which shall be the survivor, and whose the lamentation—Euphorbiaceæ, Menispermaceæ, Lauraceæ, or Rubiaceæ? Certainly those plants that are officinal require re-examination, especially as the preparations of nectandra, pareira and cinchona, are among the unsatisfactory articles in the Pharmacopœia.

Our Foreign Correspondence.

FRANCE.

Paris, May.

LENT is over, and Parisian gaieties are once more in full swing. The precocious weather of last month prematurely brought out the leaves and toilettes that surround the Lake, and both mankind and fishes felt that the *défense de pêcher* ought to have commenced earlier this season. Flocks of strangers perambulate the shady side of the Boulevards, and the tempting wares of the artistic Paris tradesman are greedily bought at three times their worth. Cheap dinners at the Palais Royal are bringing retribution on those too confiding Britishers, who, accustomed as they are to beef and ale, find their indigestions sadly unstrung by *mayonnaises* or *béchamels,* and gladly seek relief in pills and Seidlitz powders. Prescribing is not much practised by French pharmaciens; in fact, they seem to have scarcely any idea of it, and live in such an unwholesome fear of the law, that they dare not make up an unauthorised prescription. This to wit—a friend suffering from a cold, requested his pharmacien to make him up some simple sudorific mixture, such as he had been accustomed to have at home: an ounce of *pâte de guimauve* and a handful of the four pectoral flowers wherewith to make a *tisane,* were suggested as the best remedies. The fact is, there is a great deal of interplay between the physician, the dispenser, and the patient. Nearly every pharmacy has its doctor, nearly every doctor his pharmacy. Socially it may be well, individually it is intolerable. Happy is the pharmacien who succeeds in persuading some eminent M.D. to become interested in his speciality, and to prove practically the efficacy of his vaunted remedy.

The annual meeting of the Mutual Society of Paris Pharmaciens has been held, and the stormy discussion that ensued over the heart-burnings between first and second-class men was without parallel in the history of pharmacy. The "Marseillaise" was sung by the students, apparently without other object than that of mischief. It appears that a deputation of second-class pharmaciens waited on his Excellency, M. Segris, the present Minister of Public Instruction, who promised to do something towards ameliorating the ambiguous position in which they are now placed. The pharmaceutical journals are now filled with complaining letters deprecating the fall of pharmacy. The Bordeaux society, through its organ, admirably edited by M. Perrens, recommends its readers to return to general commerce, seeing no more loss of dignity in selling tooth-brushes, Eau-de-Botot, or any other hygienic preparation, than in debiting sulphate of magnesia, a thing as common as salt. Slowly, but surely, they are beginning to feel that the Elixir of Life is not to be extracted from pharmaceutical chemistry, and that an increased trade gives increased happiness. We English in Paris do not scruple to supply anything that has a legitimate relation to the preservation of health, and the French are not slow in following our example; in fact, it is flattering to see their silent recognition of our superiority in commercial affairs. That it is their own fault, no one can deny, but the root of the evil is in their education and scientific pride, which obliges them, as *noblesse oblige,* to trade in drugs and nought else. The habits, too, of the French people are different to our own, and they recognise in perfumery, though an offspring of pharmacy, a distinct and separate business. Hence the pharmaciens must "educate" their customers, if they wish to regain the ground they have lost, and re-establish themselves before the public as men of business as well as mere clyster-mongers.

Opium is the present theme of discontent amongst the wholesale druggists, none in the market giving more than 5 or 6 per cent. of morphia. The price, 100 francs a kilogramme, is sufficient to create but few demands. However, Chloral is the favourite sedative of the day, and its use is daily increasing. M. Limousin's Hydrated Chloral Capsules promise to be successful, the acridity of the remedy rendering it unpleasant in syrups or other solutions. Its low melting point enables it to be readily capsuled in the liquid state, and crystallisation soon taking place, the capsules keep well, and offer the advantages of easy administration and rapid effects.

An interesting philosophical work, on Intelligence, by H. Taine, has just appeared, and contains several new trains of thought peculiarly applicable to dispensers. The author divides the mental essence into two distinct parts—the one appreciates intuitively the sensations produced by the image of what our senses reveal to us; the other reproduces the images (*simulâcres*) and sensations when we reflect voluntarily or involuntarily on past or ideal events. Hence anticipation is often more pleasurable than reality, proving a second self capable of as much appreciation as positive actuality. Each one of us can testify the frequency with which he recollects an error he has made in making up a prescription during the momentary reflection occasioned by the manual process of wrapping up a bottle or a box of pills. Cultivate, then, this reflective faculty, and a weapon of self-protection more powerful than all the poison-cupboards and legislative measures in the world is yours.

A study of the plant producing the Thapsia resin, lately so much employed in France, has induced M. Cauvet to recognise in it the *σιλφιον* (hitherto supposed to be assafœtida) of the Greeks, or Laserpitium of the Romans. The resin is an admirable counter-irritant, more effective than cantharides or croton oil, and it deserves the attention of our enterprising English pharmacists, to whom a novelty is a thing of value. The plant, *Thapsia garganica,* grows abundantly on the sandy shores of Algeria, and the resin is commonly used as a vesicant and external stimulant by the Arabs, who call it Bou Nâfâ, or the father of good.

The following *blague* is extracted from a recent number of the *Figaro:*—Macready, the illustrious actor, wrote most illegibly, and a box-order that he had sent to a friend was mistaken for physician's prescription, and accordingly sent to the nearest chemist's to be made up. The assistant proceeded to mix one or two ingredients, but being somewhat puzzled, referred to his patron, who, making an *aqua ad* of the remainder, gravely handed over the mixture, remarking at the same time that it was an admirable cough specific—price, one and sixpence.

This almost equals the story of the English physician in Paris, who, one Christmas-day, wrote a prescription for a plum-pudding, directing the cataplasm to be sent whilst hot.*

Pharmaceutical Society of Great Britain.

EVENING MEETING, WEDNESDAY, MAY 4TH. †

MR. HASELDEN, VICE-PRESIDENT, IN THE CHAIR.

THE minutes of the preceding meeting were read, and subsequent donations to the library and museum acknowledged. Attention was drawn to a specimen of a combination of chloral and ethylic alcohol on the table. As this compound contains ten per cent. less chloral than the genuine hydrate, the fact that it has entered into the markets is of importance to consumers.

LINIMENT OF IODIDE OF POTASSIUM AND SOAP.

Professor **REDWOOD** alluded briefly to the question of *Lin. Potassii Iodidi cum Sapone*, recommending the use of the nearly pure oleate of soda, as found in Wood's almond oil soap. The liniment had been made with such soap and a perfectly satisfactory result obtained; occasionally it had been found necessary to warm the mixture. Professor Redwood thought such a soap very well suited for introduction into the Pharmacopœia.

PRESCRIPTIONS FOR EXAMINATION.

Mr. **JOSEPH INCE**, in continuation of his former paper, detailed results obtained subsequent to the last evening meeting of the Society. He had received twenty-seven collections, some of which were excellent. Among the best were those forwarded by Professor Attfield, Messrs. Baildon, Bourdas, Hornsby, and Richard Reynolds. Messrs. Bell and Company, of Oxford-street, sent three separate contributions. Special attention was drawn to the following selections :—

I. Mr. John Mackay, of Edinburgh. As a return compliment, the Scottish Examination Book has been re-set, and augmented.

II. Mr. Charles H. Savory, New Bond-street. This includes formulæ written by Budd, Copland, Cutler, Henry Davies, Gream, Ernest Hart, Henry Charles Johnson, Sir Ranald Martin, Latham, Pettigrew, Stone, Todd, Victor de Méric, and others.

III. Mr. Daniel Hanbury. A splendid collection, far exceeding in value and extent anything the Society has yet possessed.

Mr. Ince once more appealed to those engaged in Pharmacy for their active support. He had obtained promises from many districts in England, and he knew that the medical practice of the University of Oxford would be thoroughly represented. Gentlemen not pharmacists were collecting for him at Naples and Turin. Referring to a request for help that had been forwarded to America, Mr. Ince said :—"At this moment a strong application, framed by my friend and companion in arms, John Cargill Brough, is making its way across the Atlantic. I live in hope that cities like New York, Philadelphia, Baltimore, Boston, Washington, and many others, will shake hands with us in this undertaking. Our President might be induced to write to Canada; and I am certain that Mr. Albert Ebert, of Chicago, will give his warmest support. There can be no good reason why the ocean should separate otherwise than geographically two great countries such as America and England."

Mr. Ince then remarked, that having been so abundantly assisted, he has no hesitation in venturing on fifteen volumes of prescriptions, which would be produced with all convenient speed. But the work would not be hurried, lest failure should ensue. He intended to complete the existing Books of the Board of Examiners, create a Library of Reference, and establish a Loan Collection, which last should circulate wherever a Board of Examiners or a Pharmaceutical Association existed.

The second part of the subject was of a more abstract character. After stating the gain to the student of seeing varied formulæ, and of being able to recognise the handwriting of celebrated practitioners (a plan recommended by Mr. Deane, but anticipated by Mr. Charles Savory, who in every instance has appended the name of the prescriber to a recipe), Mr. Ince passed on to the objection constantly offered, that the advantage of such a collection named would be limited to residents in London. The objection was at once met by saying that London *was* the metropolis, and that the great money-centre would necessarily be the intellectual. There *was* a gain in a town residence, else why should any leave their own homes? But the same argument that would close our books would shut the doors of the Institution. The last point referred to was the utilisation of the proposed collection. It was desirable that the series should be as little under restriction as the rare volumes in the British Museum, or the costly illustrations treasured up in the Art Library at South Kensington, where for the sum of sixpence weekly any professional or amateur might read, extract, copy, or trace whatever he desired. Mr. Ince would under proper regulations extend the same privilege to all to whom such a proposal might be of service

By request we print in full the concluding observations :—

"Let me offend no one while unhesitatingly I condemn a certain idea against which I stand out resolutely as a rock. I should deem it waste of every moment spent in this present work, were the books locked up for the special benefit of the examiners. But the notion I dislike the most is, that the student should not be allowed to gaze on the *same* mysterious documents as his examiner. Why are those young men tampering with the drawers of Materia Medica? Perhaps they want to know more than print and cram books will tell them. Imagine the despair of a well-known examiner receiving answers from a man who had never seen a root or bark! Might he not be expected to retire to some secluded City court, and never be heard of more? Why are those others touching and handling plants and flowers? The police are most remiss; and positively before my very eyes there is a third investigating an assortment of chemicals. Professor Attfield exclaims with horror, 'You could not have guessed at them, had you not seen them before!' 'Excuse me' (replies the student), 'that is precisely, under the circumstances mentioned, what I should have done.' How, and why, do you draw the line; what is the line between one branch of pharmacy and another? But probably the student might get to know too much. One would put the other up to private dodges, and the examination be reduced to a mere form. That our students should accidentally be too well instructed is not in the number of my anxieties. I remark simply that if throwing these books open results in candidates being thoroughly competent to understand their contents, this will be the brightest experiment yet made since the creation of our Society. When that millennium dawns, I solemnly engage to illuminate St. George's-place. What *can* be the wish of an examiner; what *can* afford him higher pleasure, than that the examined should be equal to the ordeal? This illiberality, not to say injustice, implies that our examinations are a catch—a trap arranged to snare the candidate—a block for an anticipated stumble. Nothing more characterises our examinations than their fairness, a sentiment I am confident our excellent inspector will confirm. I speak from personal observation when I say that the examiner is invariably on the side of the examined. We want him to *know*—to have that amount of knowledge which shall compel future success; and it is not the object of the Board to ask quibble questions, answered glibly by clever superficial applicants, but misunderstood by scholars. Still, was not the Society's own collection mentioned formerly, and is it forgotten that that interesting volume looked like a railway accident? Only remember that sixty-two prescriptions formed the limit of the Society's accommodation. The existence of that too bulky tome militated against the doctrine of continuity. Given the number of students, and the aid supplied, and how can we wonder at the result. But it is said, and this I cannot endure, that the students will spoil the books. Then somebody is to blame. Books used with love and reverence will remain unsoiled for years. Masters might occasionally tell those employed in their service what these compilations hold; something about Sir B. Brodie, who himself became a dispenser—and when asked the reason why, said it was to educate his hands; something about Dr. Paris, whose work, the *Pharmacologia*, is up to this night the most perfect representative of its class of Pharmaceutical literature; something about Elliotson, whose diagnosis of disease was thought infallible, and to whom the great novelist addressed an exquisite dedication of his best fiction; something about Liston, that first of operators; Sir Henry Holland, unrivalled as a Latinist, and others. No one can be a successful physician whose history is devoid of interest. Aware of these things, will students spoil the books? I am ashamed of having employed so much time in their defence. Let these new volumes, soon to adorn our shelves, reflect credit on English Pharmacy, and be a standing memorial of unwonted personal kindness; let them be placed in our library free as air; and while I thank you for the patience with which you have listened to these details, let me parody a sentence often seen in our walks—'These gardens being the property of the public, they are requested to protect the flowers.' So I say: These books being *your* property, kindly keep them in good preservation."

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* This good story is humorously told in an article contributed to the CHEMIST AND DRUGGIST in January, 1862. The writer of the prescription was Dr. Schomberg, of Reading.—ED.

† Reported specially for this Journal.

Mr. Bland did not entirely agree with Mr. Ince, though he admitted that the possession of an unrivalled collection of prescriptions would constitute an undoubted advantage. It would, however, be extravagant to expect the teachers of the Pharmaceutical Society to instruct the students in prescriptions and dispensing. A special education was necessary to enable a student to decipher prescriptions readily, and even were a special professor appointed, he did not believe the subjects could be satisfactorily taught by the Society. There was much to find fault with in the orthography, grammar, and chemical knowledge of the writers of some prescriptions. The "fashion" in prescriptions would also change, and a large collection become useless in ten years for all educational purposes.

Professor Attfield did not gather that the prescriptions were to become educational, and to be taught by a professor, but understood that Mr. Ince meant the books to constitute works of reference for students as well as others. Besides, if the collection now made became useless in ten years, it could very readily be renewed.

COMPOUND OINTMENT OF MERCURY.

Mr. Gerrard, dispenser at Guy's Hospital, read a communication on this preparation, showing that the instructions in the Pharmacopœia are not calculated to ensure success in manufacturing quantities of the ointment larger than mentioned in the Pharmacopœia; the point which he thought needed modification was that of the application of heat. In preparing a quantity greater than that of the Pharmacopœia it was only necessary to continue the heat after the addition of the oil to the wax, so as to re-dissolve any portion of the latter which might solidify by contact with the cold oil, and then to add the camphor and ointment of mercury. In preparing larger quantities, however, it appeared necessary to keep the wax and oil in a state of fusion some time after the addition of the other ingredients, taking suitable precautions to avoid loss of camphor by volatilisation, and when well mixed to agitate the mixture by stirring until cold. In a second communication, on

OINTMENT OF TURPENTINE,

Mr. Gerrard said he found that a large portion of the turpentine used in this preparation was wasted, owing to evaporation whilst under the influence of heat. By first melting the resin, wax, and lard, and then adding the turpentine without further application of heat, a considerable reduction in the amount of the loss was effected, but the product was too thin. He therefore suggested that both the manipulation and the proportions of the ingredients as expressed in the *Pharmacopœia* should be modified in the manner indicated by his experiments.

The Chairman drew attention to a

MACERATOR FOR THE PREPARATION OF TINCTURES

Manufactured by Mr. Rossiter, of Hastings. This contrivance is simply a modification of the well-known plan of enclosing the substance in a bag suspended by means of a string in the midst of the menstruum. The bag is replaced by means of a perforated zinc cage attached to a wooden cover by a screw which permits it to be fixed at any convenient height in the glass vessel which supports the whole.

Another evening meeting will perhaps be held in June; definite information will be given on this point in the next number of the *Pharmaceutical Journal*.

MEETING OF THE COUNCIL, *April 6th*, 1870,*

MR. HENRY SUGDEN EVANS, PRESIDENT, IN THE CHAIR.

MR. HASELDEN, VICE-PRESIDENT.

Present—Messrs. Abraham, Bottle, Bourdas, Carteighe, Deane, Hills, Morson, Randall, Savage, Squire, Stoddart, and Williams.

The minutes of the last meeting were read and confirmed.

The Secretary reported that he had received the following names, members of the Society, in nomination as Candidates in the election of Council for the ensuing year, and who had accepted:—

Abraham, John, 87, Bold-street, Liverpool.
Atherton, John Henry, Nottingham.
Barnes, James B., Trevor Terrace, Knightsbridge, S.W.
Betty, Samuel Chapman, 51, Park-street, Camden Town, N.W.
Bottle, Alexander, 37, Townwall-street, Dover.
Breton, Walter, 137, Cannon-street, E.C.
Brown, William Scott, 113, Market-street, Manchester.
Edwards, George, Dartford, Kent.
Evans, Henry Sugden, 60, Bartholomew Close, E.C.
Carr, John, 171, High Holborn, W.C.
Gissing, Thomas Waller, Wakefield.
Greenish, Thomas, 20, New-street, Dorset-square, N.W.
Groves, Thomas B., Weymouth.
Hanbury, Cornelius, Plough-court, Lombard-street, E.C.
Haselden, Adolphus Frederick, 18, Conduit-street, Regent-street.
Hornsby, John Harwood, Odiham, Hants.
Quiller, Charles Rowett, 148, Sloane-street, W.
Reynolds, Richard, 13, Briggate, Leeds.

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* From the *Pharmaceutical Journal* for May.

Sanger, William Albert, 150, Oxford Street, W.
Savage, William Dawson, 30, Upper Bedford-street, Brighton.
Savory, Charles Harley, 143, New Bond-street, W.
Stacey, Samuel Lloyd, 300, High Holborn, W.C.
Stoddart, William Walter, 9, North street, Bristol.
Stott, William, Sowerby Bridge, Yorks.
Sutton, Francis, Bank-plain, Norwich.
Williams, John, 5, New Cavendish-street, W.
Woolley, George Stephen, 69, Market street, Manchester.

The Secretary reported that he had received no nominations for Auditors, whereupon it was moved by Mr. Hills, seconded by Mr. Morson, and

Resolved—That the following Members of the Society be nominated Auditors for election at the ensuing Annual Meeting:—

Frederick Barron, Bush-lane, Cannon-street, E.C.
William Hodgkinson, 127, Aldersgate street, E.C.
John B. Mackey, 15, Bouverie-street, E.C.
William Squire, 5, Coleman-street, E.C.
Robert Westwood, 16, Newgate-street, E.C.

The Report of the Finance and House Committee was presented, showing on the General Fund account a balance in the Treasurer's hands of £1,176 11s 5d., and submitting for payment accounts, salaries, etc., amounting to £964 5s. 11d., and on the Benevolent Fund account a balance of £292 17s. 10d. The Treasurer was requested to pay the usual quarter's annuities, amounting to £75.

Resolved—That the Report be received and adopted, and payments made.

Moved by Mr. Carteighe, seconded by Mr. Williams, and

Resolved—That the salary of the Assistant Secretary be increased to £200 per annum.

The Report of the Library, Museum, and Laboratory Committee was then read and received.

CONVERSAZIONE.

In reference to the ensuing Conversazione, the Committee reported that, taking into consideration the invitation of ladies, and the difficulty of providing accommodation at the house of the Society for the extra number of visitors, they had put themselves in communication with the Lords of the Committee of Council on Education for permission to have the use of the South Kensington Museum, and that such permission had been granted.

Resolved—That the ensuing Conversazione be held on the evening of the Annual Meeting, 18th May, at the South Kensington Museum, instead of at the Society's House on the 17th of May, as resolved at the last meeting of the Council.

On the recommendation of the Committee, the following regulations were adopted:—

That each Member of the Society be supplied, on application, with a ticket to admit himself and lady.

That each Associate and Apprentice of the Society be supplied, on application, with a ticket of admission.

That each Chemist and Druggist on the Register be supplied, on application, with a ticket to admit one

That the list of invitations be revised and extended.

JOURNAL AND TRANSACTIONS OF THE SOCIETY.

The Report and Proceedings of the Committee in reference to this matter having been read, it was moved by Mr. Carteighe, seconded by Mr. Williams, and

Resolved—1. That Messrs. Taylor and Co. be employed to print the Journal for the ensuing year, as per specification and estimate tendered, with new type as agreed.

2. That Messrs Spalding and Hodge's tender for paper for the ensuing year be accepted.
3. That the size of the Journal adopted be super-royal 8vo.
4. That the publishing price be 4d. per copy, and that Members, Associates, and Apprentices be supplied with a copy gratis as heretofore.
5. That the edges be trimmed.
6. That the Journal be issued without the cover, half of the advertisements to precede, and half to follow, the text.
7. That the table of contents by placed at the top of the front page, and the official notices on the same page below.
8. That Messrs. Churchill and Sons be the publishers for the ensuing year, on the terms specified.

Moved by Mr. Savage, seconded by Mr. Stoddart, and

Resolved—That the Report of the Library, Museum, and Laboratory Committee having reference to the publication and conduct of the Journal be approved; and that a copy be furnished to the present editors.

A draft of a Bill, to enable persons registered as Chemists and Druggists in Great Britain to exercise their business in Ireland, was considered and agreed to.

Moved by Mr. Abraham, seconded by Mr. Savage, and

Resolved—That the question of legislation, with respect to the practice of Pharmacy in Ireland, be referred back to the Parliamentary Committee, with authority to take such steps as they think proper to give effect to the expressed views of the Council.

The report and proceedings of the Parliamentary Committee were read and approved, and on their recommendation, and after due consideration, it was

Resolved—That the Registrar be instructed, and is hereby authorised to erase the following names from the register of Chemists and Druggists:—

Broscomb, James, 47, Mill street, Leeds.
Campbell, Oliver, 44, Anne-street, Osborne-street, Hull.
Grimshaw, C. H., 29, Bridgman-street, Bolton.
Grimshaw, Joseph, 29, Bridgman-street, Bolton.
Harwood, Alice, 9, Chorley-road, Bolton.
Heartwell, Aaron, 20, Every-street, Manchester.
Jones, Thomas, Tynllidiard, Llandogla.
Scholefield, Serena, 20, Every-street, Manchester.
Tayler, George, 117, Porter-street, Hull.
Tremearne, A. K. N., 14, North-pier, London-docks.
Williams, Henry Augustus, Chepstow.
Woodburn, John, 46, Todd-street, Bolton.

PROPOSED REGULATIONS AS TO KEEPING AND DISPENSING OF POISONS.

Memorials against their adoption were received from—Aberdeen Ashton-under-Lyne, Birmingham, Congleton, Leeds, Manchester.

A memorial against the abolition of the Patent Medicine Stamp and Licence was received from Canterbury.

REPORTS OF BOARDS OF EXAMINERS.

March, 1870.

England and Wales.

March 16, Major	Examination,	5 candidates examined,	2 passed.
,, ,, Minor	,,	22 ,, ,,	11 ,,
,, 25, Modified	,,	30 ,, ,,	20 ,,
,, ,, Preliminary	,,	193 ,, ,,	103 ,,
	Total ..	250	136

Preliminary Examination, 23 certificates were received and approved.

Pharmacy and Chemistry.

CHLORAL AND ITS ADMINISTRATION.

THE disagreeable sensation produced in the throat by chloral, and the difficulty experienced in getting some patients to swallow the substance in its usually nauseous form, have induced Mr. S. Limousin to experiment on a new method of administering it, *i.e.*, in the form of capsules with a gelatinous or saccharine envelope. His process is published in the *Journal de Pharmacie et de Chimie.* Although it is easier to introduce the chloral into capsules of soft gelatine, yet it is necessary to use the hard, because the former induce too rapid decomposition. Medical testimony shows that chloral administrated in this manner has its full effect, and can be swallowed without any sense of irritation in the throat. Moreover, if the chloral employed in making these capsules is in any respect impure, if it has not been re-distilled, if it contains free hydrochloric acid or an excess of moisture, the gelatine is rapidly attached and the capsule destroyed, incontestable evidence being thus offered of the condition of the chloral. Mr. Limousin found that the alcoholate of chloral prepared by Mr. Roussin was much better fitted for phamaceutical use, in respect to manipulation, owing to the smaller tendency it has to absorb moisture.

In the *Journal de Pharmacie et de Chimie* attention is also drawn by Mr. Laborde to the ill effects which may result, especially in the digestive functions, from the administration of chloral.

MANUFACTURE OF GLUCOSE.

In the manufacture of glucose by starch and sulphuric acid, the reaction is not complete at the temperature obtainable at the ordinary pressure until the mixture has been long boiled; in consequence of this the glucose turned out of many manufactories still contains a very considerable quantity of dextrine, the presence of which may be indicated by the precipitate of dextrine produced on the addition of alcohol to the aqueous solution of such samples. Mr. Manbré describes in the *Moniteur Scientifique* a process by which he prepares glucose at a temperature of 160° C. by boiling the starch and acid for from two to four hours in a steam boiler under increased pressure. The product obtained is, after clarification, perfectly pure glucose without empyreumatic odour or other disagreeable feature.*

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* Mr. Manbré's process is fully explained in an original article on the manufacture of glucose in the Chemist and Druggist of 1869, page

ON THE PRESENCE OF AMYLIC ALCOHOL IN CHLOROFORM.

In the *Union Pharmaceutique* attention is drawn by M. Hardy to the presence of amylic alcohol in chloroform. By the process usually employed to rectify chloroform, namely, that of fractional distillation, the amylic alcohol is found to accumulate in the less volatile portions, and when large quantities are distilled the evidence of its presence becomes very decided in respect to smell. The author is inclined to attribute the presence of this alcohol in chloroform to the contaminated ethylic alcohol used, but he hints at the possibility that it is a secondary product in the reaction by which chloroform is produced. Comparative experiments were made with rectified and unrectified chloroform by evaporating a quantity of each on bibulous paper. Neither specimen left any visible stain, but the second left a persistent odour of amylic alcohol which was not to be detected in the case of the first. Mr. Hardy attributes the nauseous odour which remains on the compresses which have been employed in the medicinal application of chloroform to the presence of the small quantities of amylic alcohol above referred to.

AN IMPROVEMENT IN FILTRATION.

Professor Draper, of New York, has communicated to the *Philosophical Magazine* a description of a modification of Bunsen's method of filtration, by which all the practical advantages may be obtained in a simple and inexpensive manner, by those who do not possess a large supply of water. The apparatus consists of a steam boiler connected by a suitable arrangement of tubes, with a vessel in which the vacuum is to be produced. By a pressure of one atmosphere of steam in the boiler, the author was enabled to obtain an exhaustive power equivalent to a column of mercury eight inches in height. The vacuum produced depends partly on the shape of the nozzles at which the steam escapes, and partly on their relative position; the inner one can be adjusted by means of a stuffing-box.

Sidney W. Rich.

Therapeutics.

CHLORAL HYDRATE.

As the medical journals have lately been overloaded with communications touching Chloral Hydrate, we were glad to light upon an article reviewing the observations of those who have specially studied the action of this valuable hypnotic. The article referred to appeared as a leader in the *British Medical Journal* of April 23, and is here condensed.

Chloral, C_2HCl_3O, though discovered by Liebig thirty years ago, was a chemical curiosity until Dr. Otto Liebreich, of Berlin, published his investigations in June of last year. It is produced by the prolonged action of chlorine on alcohol, and it forms with water a crystalline hydrate, which is the compound therapeutically manageable. From the fact that chloral, on the addition of an alkali, became resolved into formic acid (uniting with the alkali) and chloroform, Dr. Liebreich reasoned that a similar change, effected by the alkaline fluids, might occur in the human body. He conceived the brilliant idea that chloroform might be slowly formed in the tissues by their own chemical action on the chloral. Numerous experiments were made by himself and others to put this to a practical test. The result was, that it was clearly proved that all the effects of the slow and continuous action of chloroform could be produced in animals by the administration of the hydrate of chloral; and, though Demarquay and others doubt whether these symptoms are actually the result of the evolution of chloroform, the balance of the evidence yet attainable is in favour of Liebreich's original supposition. Dr. Du Bois Reymond, in a letter to Dr. Bence Jones, has graphically indicated the physiological action of this compound. "A grain and a half of chloral injected under the skin of a good sized rabbit causes it to fall into a lethargic sleep, which lasts nine or ten hours, during which it may be thrown over the back of a chair like a towel, and from which it awakens quite jolly, rubs its eyes, and asks for more carrots and potatoes." Normal, peaceful sleep is the result of its administration; and, on recovery, no ill results whatever remain behind; and in many cases the appetite has been considerably sharpened. The extent to which muscular relaxation occurs during the sleep is a very marked feature, and indicates a class of cases in which the drug may be advantageously used. One interesting physiological symptom is the decided fall of temperature. Dr. Richardson mentions a case of surgical fever in which the temperature fell from 102 deg. to normal. Mr. Spencer Wells has seen a case in which the temperature fell from 104 to 99 deg. after four doses of twenty grains each, at intervals of two hours.

With reference to the production of anæsthesia, opinions differ, but are quite capable of being reconciled. It seems certain that prolonged anæsthesia cannot be produced, except by such doses as to endanger life. Amputation of the thigh has, however, been performed without the patient feeling, and recovery has followed; but the coma was such as to give rise to serious anxiety. In not a few cases, before sleep ensues, there is a period of partial intoxication and pleasurable excitement.

As a hypnotic, all observers are agreed that its influence in procuring sleep holds the first place amongst its uses. There is no evidence at present to show that any ill result whatever follows its use in any dose save such an excessive one as to procure death, which has not yet occurred. The taste of a dilute solution is stated by Dr. Richardson to be rather pleasant than otherwise; but most people experience a burning sensation, referred to the epigastrium. This is especially the case if too saturated a solution be employed. Vomiting is occasionally produced by a dose; but curiously, if the dose be immediately repeated, there is no second rejection. Half a drachm in an ounce of syrup and water is a safe dose for an adult, and will require repeating, if no effect follow in half an hour. If the patient be much exhausted, this dose will quickly (in ten minutes) procure sleep. If objection be taken to the taste, double the dose can be injected by the rectum. Subcutaneous injection is practicable, but inconvenient, and liable to be followed by sores. If tried, several punctures should be made—not one only.

The time for which chloral may be continued seems indefinite. Dr. Richardson, however, points out that the influence of the chloral on the blood, if considerable doses were repeated at short intervals, might be very detrimental; formiate of soda is formed, and the coagulating power of the blood is much diminished. In the March number of the *Practitioner*, Dr. Reynolds records the case of a lady of middle age to whom doses of chloral had been given for two days for neuralgia, with good effect. On the third day, a dose of forty-five to fifty grains was given, and relief from pain followed. In the course of an hour, however, faintness came on, and increased to an alarming degree. Two hours after the dose, she had cold extremities; a rapid, weak, irregular, intermittent pulse; jactitation of limbs; an intolerable sense of sinking and oppression at the pit of the stomach; gasping breathing; and confusion of thought. The pulsations of the distal arteries were as above described;

but the heart was acting regularly, though with increased frequency. Stimulants and white of egg were administered, with the effect of rallying her. About four hours after the dose of chloral, a second attack of faintness, weak, frequent pulse, oppression, dyspnœa, etc., occurred. Recourse was again had to stimulants and white of egg, and the patient again rallied. Dr. Reynolds calls attention to the fact that he found white of egg more efficacious than stimulants. In the April number is a note of the case of a child, three years and a half old, to whom doses of four grains were given for seven nights with benefit. On the eighth night no chloral was given, and the child was seized with faintness and symptoms similar to those in Dr. Reynolds's case. The administration of food was followed by recovery. No more chloral was given; but again on the third night similar symptoms recurred, and again yielded to the administration of food. It would seem necessary to supply to the full extent the longing for food often expressed by patients. Any cases in which chloral definitely disagrees would be well worthy of note.

In *tetanus*, there is no doubt that chloral will procure muscular relaxation, and add to the patient's comfort, but there is no reason to suppose that it exercises any curative effect.

The result of the administration of chloral in cases of *delirium tremens* has been generally very satisfactory; but the dose required varies very much.

Chloral has been tried in numerous other affections—*whooping-cough; convulsions*, epileptic or otherwise; *chorea; neuralgia*, etc., with more or less benefit. In *maniacal paroxysms* its influence has been very marked. In *asthma* great relief has followed its use. It is said to relieve the *gastric irritation* met with in gout, etc. It has allayed *vomiting*. In *puerperal mania* it is reported well of. To relieve pain from the tension of inflamed parts, chloral will probably be very efficacious.

Its Antidote.—While Liebreich was watching the muscular relaxation produced by chloral in a case of tetanus, it struck him that strychnine must be antagonistic to chloral, and would prevent its action. He killed two dogs with chloral, and to a third administered the same quantity, but quickly afterwards gave a dose of strychnine. No sleep nor convulsive movements resulted. In any case in which dangerous symptoms occur, it will be advisable to have recourse to the white of egg, as found serviceable by Dr. Reynolds.

Veterinary Notes.

BY W. HUNTING, M.R.C.V.S.

USE AND ABUSE OF ARSENIC.

It is to be hoped that the Sale of Poisons Act will be a check on the indiscriminate use of arsenic by ignorant persons. It is not generally known to what an extent this drug has been abused. Horsekeepers habituate animals to the use of it, with a view of producing a fine coat. Doubtless, in most cases, they attain their object, but they bring the system into such a state that the sudden discontinuance of the medicine is attended with some danger. As by carters and coachmen it is generally given secretly, either a change of the men or the sale of the horse at once stops the accustomed stimulant, when, if nothing worse happens, there is a falling off in condition, without apparent cause. Change of food is tried, perhaps vegetable tonics, and yet no improvement. Should the owner not have patience, either the new man is unjustly blamed for improper attention, or the horse is sold as a bad thriver. My experience among heavy horses in London leads me to believe that animals accustomed to arsenic, if attacked with fever, make a slower recovery than others. It is commonly held that the sudden stoppage of a course of arsenic is attended by symptoms of arsenical poisoning. I have never seen such, even after the known administration of ten grains a day for a month.

Another abuse of arsenic is for the production of a quantity of frothy white saliva, a small piece of the mineral being tied in muslin round the bit. Of course it acts merely as a local irritant. Its use as a caustic I unhesitatingly place amongst the abuses. There is a wide field for choice without taking one so painful and dangerous. Raw surfaces readily absorb it. I almost think we ought to place its use as a parasiticide in the same category. Many accidents have happened to men and animals, and nothing is achieved by its use that cannot be equally well done by non-poisonous mixtures.

It is useful in various diseases; in broken wind, chronic coughs, farcy, and skin diseases; as a tonic, in cases of debility, accompanied by no organic lesions, and in chronic rheumatic affections. In many skin diseases of dogs arsenic is a specific—how it acts in any case I know not, merely that it does. It is easily administered, either in the solid form, as powders with the food, or in a liquid, as liquor arsenicalis. The former is handiest for the horse, the latter for the dog, who is apt to vomit solid arsenic.

FOUNDER, OR FEVER IN THE FEET.

The first of these names is much the better; the latter is altogether stupid, for fever cannot be local, being a general disease.

By founder is meant a disease of the horse's foot, in which the sensitive layer immediately within the hoof is congested, or even inflamed. Veterinary works tell us of acute and chronic founder, but we will here merely consider the acute form.

The most common cause is a long journey on a hard road. It appears, too, in horses out of condition, as a sequel of hard work, as for instance, in the case of horses made up for sale being put to regular work too suddenly. Probably most cases have badly-fitted shoes as a predisposing cause.

The first symptoms are frequent shifting of the feet and signs of pain, as quickened breathing and pulse. Next we find a fear of raising one foot, lest extra weight be thrown on the other; this causes the body to sway backwards and forwards, without the feet being moved. If force be used, the animal moves as though his back was injured, and puts the heel of the foot most markedly on the ground. When the fore feet alone are affected, as is usually the case, the hind feet are drawn forward under the belly, so as to lighten the weight on the fore.

The affected feet are hotter than usual, and throbbing is felt above the coronet.

The treatment must not be so heroic, as is advised by Youatt. Bleeding is injurious, especially local bleeding. First give a dose of physic; then remove the animal to a smooth, hard-bottomed loose box, with a light covering of clean straw. The shoes must be removed, and this is not easy; in some cases it can only be done when the animal is lying down. Special shaped shoes are then by some recommended. I advise merely that a good broad bearing surface be given to the foot with a rasp, the sole left untouched, and no shoes put on.

The bearing surface of the foot should not be left level from heel to toe, but highest at the quarters. Suppose when the shoes are removed that the foot is level, then merely lower the heels a little, and also the toe, so as to produce a sort of rocking surface; by so doing we throw more weight on the hind parts of the foot, and relieve the front parts which are most affected.

At the very commencement, before congestion is established, the application of cold water is indicated; but as this stage is never noticed, we may safely advise warm water fomentations.

The heat and moisture relaxes the tissues, dilates the blood-vessels, and thus favours a return of normal circulation in the parts. This treatment must not be continued too long, for so soon as the acute pain has subsided we may know that the local mischief is on the decline, and then heat and moisture do more harm than good. We must use hand-rubbing to the limbs, and give gentle walking exercise. When the horse is re-shod the shoes should be fitted to suit the rounded foot surface above described, and the soles should be left as strong as possible.

A simple case of founder under this treatment will recover in about a week, or at most two. Some cases, however, are most tedious, and followed by a permanent deformity—what is called "pumiced foot."

The idea of the coffin bone pressing upon the sole and causing this bulging is very erroneous.

The fact is, when inflammation has been violent and resolution imperfect, a mass of exudation becomes organised, and this presses the sole out of its proper form.

When thoroughly established there is no cure for this deformity, though by careful shoeing an animal may be kept sound.

Homœopathy.

THE PHARMACOPŒIA.—FIRST NOTICE.

An early copy of this long-promised work has reached us, but we have not yet been able to give it the attention that its official character and importance demand. We therefore reserve a critical review of the work until next month, and merely take this opportunity to bring it under the notice of those to whom it will be a necessary book of reference in business, and who, like ourselves, will during the next few weeks examine its pages with careful minuteness. Our readers have long ago been made aware that the British Homœopathic Society had decided to produce such a work, and that to Dr. Madden the chief part of the labour had been entrusted. We have recently had occasion to report a lecture by this gentleman in which the most characteristic features of the new pharmacopœia were explained to the homœopathic chemists. Our readers are therefore acquainted with the leading characteristics of the work. Next month our duty will be to examine the different parts of the book and see whether homœopathic practice is now rendered perfectly simple and clear from all suspicion of quackery. The possession of an authorised pharmacopœia will in no sense dispense with skill in the chemist, still less will it alone afford a physician the knowledge he requires. To our minds the great object attained by its publication appears to be the clear definition of the homœopathic system. Henceforth this system, whether right or wrong, will be placed on its merits alone; and we think the Homœopathic Society has acted wisely, as well as courageously, in giving the public an official statement of what homœopathy really is. Individual practice is sure to vary, but a standard is now set up, and there can henceforth be no mistake as to who is and who is not a homœopath. The book is well printed and bound, and the contents seem to be well digested and clearly arranged.

HOMŒOPATHIC PHARMACEUTICAL SOCIETY.

On the evening of the 10th inst. Dr. **Hamilton** gave a lecture to the members of the above Association on the History of the Natural Order of Plants, with reference to homœopathic pharmacy. Taking Balfour's classification as a guide, the doctor sketched out the botanical characters of the various classes and orders from which homœopathic remedies are selected, and arranged the latter in natural series. Some carefully-executed diagrams were shown to illustrate the differences of the classes, and coloured drawings of the chief plants were also exhibited. The meeting warmly thanked Dr. Hamilton for his instructive lecture.

CONTAMINATION.

The remarks which we made under this heading last month, express not only our own views, but those of gentlemen who are more practically acquainted with homœopathy than we can claim to be. We invite the careful attention of homœopathic readers to the following able and interesting letter, by the president of the Homœopathic Pharmaceutical Society:—

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

Dear Sir,—Fully concurring in your remarks upon "contamination" given in the last number of the Chemist and Druggist, you will perhaps allow me to make a few further observations on this subject, because I feel that many who advocate homœopathy are unnecessarily prudish in this direction.

Now, while I advocate the greatest cleanliness and care in dispensing and preparing medicines, I have not those absurd fancies about contamination which I hear so frequently advanced by homœopathic chemists and medical men, and for the following reasons:—

Let us take, for example, the familiar drug Belladonna: it has certain well-known physiological characteristics which are peculiar to itself, which in their entirety constitute its character, and no other plant under the sun possesses precisely similar properties as a healing or as a poisoning agent, because no other plant under heaven has precisely the same elective affinities as Belladonna. In life it may be and is surrounded by ten thousand different influences and odours floating in the atmosphere and permeating the soil in which it grows, but it takes up only such matters and forces as will, by the laws of its existence, result in the elaboration of that principle which gives it its character and constitutes it Belladonna. The matured plant is taken by the chemist, and by processses of pharmacy robbed of its peculiar properties by an appropriate solvent; and here, again, you have a result in the essence or tincture you could not obtain from any other plant in the vegetable kingdom. Of this product you take ten drops, and dilute it with ninety drops of alcohol, the same strength as that used in the preparation of the tincture or essence; perfect the diffusion of these ten drops by succession, and then take of this first decimal dilution ten drops, and the same quantity of spirit; agitate for perfect diffusion; repeat this process a few times, and it will be seen that your product has lost the odour and colour of Belladonna tincture, so far, at least, as your eye and nasal organ can detect. But has it lost the peculiarities of Belladonna because the material indications which the matrix tincture or essence possessed are gone? Certainly not, any more than in rejecting the exhausted magma you rejected the peculiar properties which once were stored up in it. You have now Belladonised Alcohol, though as to external appearances everything is changed, but, introduced into the living organism of man, that "fearfully and wonderfully" made microcosm which gives us reactions and indications to which in comparison the wonders of the spectroscope sink into insignificance, and it will soon be seen by the effect of a few doses, repeated at short intervals, that the pupil of the eye expands, and there are unmistakable signs of Belladonna action being set up, even though the person taking it was in good health; and so great is the susceptibility of some persons to the action of this drug, that in some forms of disease to which it is applicable, and for which it has been prescribed in the lower dilutions, that the aggravation of symptoms have been so intense as to excite the alarm of persons unaccustomed to those results. Now I contend that if a homœopathic medicine when introduced into the stomach—wherein are impurities enough in all conscience—can both set up its own peculiar physiological action, and act curatively, there is no need for all this fuss about contamination. Besides, is not everything we touch contaminated by the contact? Let a man wash his hands ever so carefully, draw a piece of platinum wire—which has been previously burnt clean in one of Bunsen's lamps—between his finger and thumb, introduce it into the flame, and he will get a most brilliant sodium reaction. There is nothing absolutely pure. The atmosphere we breathe is full of impurities, our very clothes are constantly emitting dust. Each step we take the movement puts in motion a thousand times ten thousand atoms of a very heterogeneous character; and if our homœopathic remedies could not act *truly* unless free from all contamination, I for one should retire from the position I now occupy, and cease to be a homœopathic chemist. Medicines homœopathically prepared above the third potency are not amenable to the laws of matter, and I should just as soon think of contaminating a ray of light as contaminating a homœopathic medicine in the sense that some of those who make so much to do about contamination complain about. Our pharmacies, in spite of all our care, are never absolutely free from drug auras; but fortunately for homœopathic patients, and for the system we advocate, there is not so much to fear from contamination as at first sight might be apprehended.

The above statements are no apology for slovenliness and carelessness, but while insisting upon as much care and cleanliness as possible, let us not provoke the "smile" of the so-called advocates of "orthodox system" by insisting upon absurdities by way of precaution.

I am, Sir, yours truly,
FREDK. ROSS.

We have to acknowledge a second communication from Mr. Dufty, of Sheffield, on Homœopathy in Parliament, for which we have no space; and also the receipt of some homœopathic wafers for the administration of medicines, from Messrs. Berry and Co., of Northampton, which, however, as they are only little oval pieces of ordinary wafer paper, hardly seem worth dignifying as a novelty.

Dentistry.

PRESERVATION OF WISDOM TEETH.

IN the *Dental Cosmos*, of Philadelphia, for April, one of the editors, Dr. McQUILLEN, writes:—There is a general impression on the part of the community, shared to a great extent by the dental profession, that the wisdom teeth are of such little value that the best thing that can be expected of them is to serve a few years and then be extracted. That this is their usual fate cannot be denied. That such *should* be the invariable result is, however, a matter of question.

The fatality attendant upon these teeth is due to causes which, if promptly removed, would insure the preservation of a large number for many years of service. This is said advisedly, and based upon a personal experience, in which a large number of such teeth were promptly attended to, and are now useful organs.

A prolific cause of decay in these teeth is the slowness of their eruption; a portion of the crown emerges from under the gum, while the remainder will be covered for months, and in some instances, for one or more years, with a flap of gum. This, of course, favours the retention of fluids and solids, which, undergoing decomposition, act destructively on the enamel. The removal of these substances by the toothbrush is prevented by the overhanging gum. In addition to this, it is quite common for fissures to exist in the crowns, owing to defective formation of the enamel. A combination of such conditions very naturally produces decay of the most rapid and radical character, frequently involving an exposure of the pulp before the complete eruption of the tooth.

The first indication of the appearance of a wisdom tooth by the eruption of one of the tubercles should be promptly followed by the *complete removal* of the overhanging gum, so as to fully expose the masticating surface. This can be readily done by a properly constructed and sharp lancet. A careful examination should then be made with delicate probes to ascertain whether there are any fissures in the crown, and if so, these should be excavated and filled; impressing upon the mind of the patient at the same time that the operation is to be regarded as a temporary one.

Owing to the incomplete growth of the tooth, it would be improper to apply the usual force necessary for the consolidation of the gold. In the course of a year or two the filling can be replaced by a permanent operation. Attention is directed to this matter on account of the fact that several patients have recently reminded me of operations such as this performed for them several years ago. The importance of preserving these teeth is heightened by the excessive liability of decay and loss on the part of the first permanent molars. Their absence makes it incumbent that every effort should be put forth for the preservation of the remaining molars, so as to secure the thorough mastication of food.

Photography.

HENDERSON'S SENSITISED PAPER.

ONE of the drawbacks to the practice of photography by particular folk has hitherto been the annoyance which the irremovable silver spots on otherwise delicate fingers have occasioned. These spots have been almost entirely owing to the tiresome process of sensitising the albumenised paper for printing the pictures from the negatives. Mr. HENDERSON, the artist of King William-street, London, has lately obviated this difficulty by inventing a process whereby albumenised paper can be sensitised and kept ready for use. A great advantage presented by the use of such paper is that it is so evenly sensitised that in the pictures the marring effect of white specks is certainly avoided. It is not known whether the paper will retain its properties long enough to fit it for export, or for long keeping; but if it stands the trials to which it will certainly be subjected, it must become an article of great sale. Mr. Cooke, of Hoxton, is the sole manufacturer, under arrangement with the patentee.

RAISED ENAMEL PHOTOGRAPH.

Mr. HENRY CLAUDET, of Regent-street, has introduced a very charming novelty in cartes-de-visite under the above title. The portraits are on a convex surface, and have the appearance of pictures on ivory. The process is of course a secret, but the result is very attractive, and will, without doubt, please the public, as a more life-like and artistic portrait is thus produced. We are informed that pictures thus taken are more permanent than if taken under the usual process.

ALBUMENISED PAPER.

Mr. JOHN COOKE, Hoxton, has a large collection of photographs by various artists, which have all been printed on albumenized paper of his manufacture. The extreme beauty of some of these, and the general superiority of all, justifies us in recommending purchasers who have not hitherto done so, to give this article a trial.

ACCORDING to the *Athenæum*, the Cinchona seed received at Darjeeling, in the Himalayas, from Java, is reported to be thriving well. The Superintendent of Cinchona Plantations in India, Dr. T. Anderson, is now making experiments in manufacturing quinine, and other febrifuge alkaloids.

A NEW Dictionary of Science, edited by Mr. G. Farrer Rodwell, will be published by Messrs. Moxon and Co. at an early date. This work will be uniform with "Haydn's Dictionary of Dates" and "Dictionary of Biography," and will comprise acoustics, astronomy, chemistry, dynamics, electricity, heat, hydrodynamics, hydrostatics, light, magnetism, meteorology, pneumatics, and statics. These subjects will be treated of by Mr. J. T. Bottomley, Lecturer on Natural Science in King's College School; Mr. William Crookes, Mr. Frederick Guthrie, Professor of Natural Philosophy in the Royal School of Mines; Mr. R. A. Proctor, Mr. Richard Wormell, and the Editor.

OUR LIBRARY TABLE.

THIS month we cannot analyse the important works that lie on our table, but we can promise authors and publishers long notices in early numbers. In June the meetings of societies become rare, and the columns of the serials begin to gape for literary matter. Moreover, before the next number of this journal appears, a certain conscientious reviewer hopes to regain the power which has been taken from him by physical suffering. Among the books on our table is a handsome volume of 650 pages, which specially claims the attention of the busy practitioner of medicine or pharmacy who cannot read many journals. It is entitled *Reports on the Progress of Practical and Scientific Medicine in different Parts of the World*, and has been produced by Dr. HORACE DOBELL and numerous distinguished coadjutors. It is a compendium of medical science for the year beginning June 1, 1868, and ending June 1, 1869, and is issued as the first of a series of year-books. Many of the reports which it contains may be studied with profit by the pharmacist. We may mention specially the report on Mechanical Appliances, Instruments, and Inventions, by Mr. Heather Bigg; that on Materia Medica and Therapeutics, by Dr. Wahltuch; and that on Pharmacy, by Mr. Squire. From Philadelphia we have received a work of a similar character, entitled the *Half-yearly Compendium of Medical Science*. This is an admirable synopsis of the American and European literature of Medicine, Surgery, and the collateral sciences for six months. In the last volume of the *Proceedings of the American Pharmaceutical Association* we find a most elaborate Report on the Progress of Pharmacy, which further illustrates the growing demand for periodical retrospects of scientific work. The following publications have also been forwarded to us for review: *Traité de Pharmacie, Théoretique et Pratique*, de E. SOUBEIRAN, two volumes (Victor Masson et fils); *Some Account of the Citizens of London and their Rulers*, by B. B. ORRIDGE (Effingham Wilson); *Stanford's Geological Map of London, showing Superficial Deposits*, compiled by J. B. JORDAN, of the "Mining Record" office; *The Pharmaceutical or Medico-Botanical Map of the World*, by GEORGE BARBER (Simpkin, Marshall and Co); *Dictionnaire de Chimie, Pure et Appliquée*, par AD. WURTZ, nine parts (Hachette et Cie.) These works will receive our attention before the publication of our next number.

LIST OF NEW BOOKS.

Alcott's Hospital Sketches. 12mo., 3s. 6d.
Annual of Scientific Discovery for 1870. Cr. 8vo., 8s. 6d., cloth.
Bellamy's Handy Book of Anatomical Plates. 12mo., 21s., cloth.
Blandford's Geology and Zoology of Abyssinia. 8vo, 21s., cloth.
Cambridge University Calendar for 1870. 12mo , 6s 6d., cloth.
Cassell's Popular Educator. New edition. Vol. 5. 4to , 6s., cloth.
Catlin's Lifted and Subsided Rocks of America. Cr. 8vo., 6s. 6d., cloth.
Gasc's Modern French and English Dictionary. Part I. 8vo., 3s. 6d.
Guy's (W. A.) Public Heath, &c. 12mo., 2s. 6d., cloth, sewed.
Mayor's Greek for Beginners. Part I. 12mo., 1s. 6d., cloth, sewed.
Meekle's Window Gardening. 12mo., 1s., boards.
Mongredien's Trees and Shrubs for English Plantations. 8vo., 16s.
Proctor's Other Worlds than Ours. Cr. 8vo., 10s. 6d., cloth.
Seeley's (H. G.) The Ornithosauria, &c. Illustrated. 8vo. 3s. 6d., cloth.
Sauer's (G.) The Telegraph in Europe. Roy. 8vo., 12s., cloth.
Smith's Manual of New Statutes, &c., on Bankruptcy, &c. 10s.
Sowerby's English Botany. Vol. 10. Royal 8vo., 38s., cloth.
Stevens's Flint Chips, a Guide to Pre-Historic Archæology. 15s.
Useful Plants. Illustrated. 12mo., 2s. 6d., cloth.
Van Bruyssell's Population of an Old Pear Tree. Cr. 8vo., 6s., cloth.
Virgil's Æneid. Books 1 and 2. Translated by E. E. Middleton. 6s., cloth.
Wallace's Contributions to the Theory of Natural Selection. 8s. 6d.
Wonders of the Plant World. 12mo., 2s. 6d., cloth.

A Subscriber asks for a good receipt for making dichroïc ink. We cannot do better than recommend Messrs. Bewley and Draper's ink, which we are informed is excellent.

W. B. A. (Huntingdon).—Chloral hydrate has been used with success in the treatment of hooping cough by many practitioners. Refer to our Directory.

G. W. P. (Manchester). We regularly receive many of the American publications by post.

G. C. (Sedburgh).—We do not think that the powder referred to is a poison within the meaning of the Act.

Colonial (Bristol).—No legal qualification is required in any of the Colonies at present.

Anglicus.—1. We know of no such work in English; Dr. Piesse's book will afford much interesting information. 2. Sutton, of Norwich, and Mottershead and Co., of Manchester. 3. See Lists of same makers. 4. Parrish's *Practical Pharmacy*, published in Philadelphia, is an excellent work, but, of course, it reflects the peculiarities of American pharmacy. It can be obtained through Trübner and Co,, Paternoster-row.

John McClelland (Rosemount).—Some of the subjects referred to were fully treated in our last volume. We will keep your letter before us, and attend to its suggestions.

An Associate (Essex) sends us a prescription, of which the following is a copy:—

Ung. Hyd. Nit., ℥ss.
Ol. Olivæ Opt.
Ung. Cer. Cetacei, āā ʒiij.
Creosoti, gtt. xx.
Mft. ung. nocte mane que applicand.

Our correspondent states that, having prepared it, the ointment was of a brown colour; but it was returned as being incorrect. The prescriber had recommended it to be procured from a certain shop; and at this establishment, it seems, the ointment was turned out of a light greenish hue. The ointment should be of a straw-yellow colour, probably getting rather darker by keeping.

BRILLIANTINE.—A good recipe for Brilliantine is required by *G.W.P.* Can any of our subscribers supply one?

We have been requested to publish the following, which refers to an appeal made in our pages in January of this year, for a druggist with a large family, who had been deprived by blindness of the means of following his business:—H. B. gratefully acknowledges the receipt of the respective sums from the undermentioned parties, and desires to return his most sincere thanks to them, and to all others who have kindly contributed and so greatly assisted him in his severe affliction.

Name.	Address.	Amount.
Mr. John Wylde and Friends	Upper Brook-st., Manchester	£5 13 0
Mr. George Frost	Derby	2 15 6
John Whitby	Stratford-on-Avon	0 17 6
Dr. Chipperfield	Southampton	2 18 6
W. Bostock	241, Samford-st., Ashton-under-Lyne	1 6 6

ON the 27th ult. the Senate of the University of London elected the following Examiners:—*Mathematics and Natural Philosophy.*—Professor H. J. S. Smith, M.A., F.R.S., and Professor Sylvester, M.A., F.R.S. *Experimental Philosophy.*—Professor W. G. Adams, M.A., and Professor G. Carey Foster, B.A., F.R.S. *Chemistry.*—Dr. Matthiessen, F.R.S., and Professor Odling, M.B., F.R.S. *Botany and Vegetable Physiology.*—Joseph Dalton Hooker, M.D., LL.D., F.R.S., and Thomas Thomson, M.D , F.R.S. *Practice of Medicine.*—John Syer Bristowe, M.D., and Professor J. Russell Reynolds, M.D., F.R.S., *Surgery.*—Professor John Birkett, F.R.C.S., and F. Le Gros Clark, F.R.C.S. *Anatomy.*—Professor William Turner, M.B., and Professor John Wood, F.R.C.S. *Physiology, Comparative Anatomy, and Zoology.*—Michael Foster, M.D., and Henry Power, M.B. *Obstetric Medicine.*—Robert Barnes, M.D,, and Professor W. M. Graily Hewitt, M.D. *Materia Medica and Pharmaceutical Chemistry.*—Thomas R. Fraser, M.D., and Professor Alfred Baring Garrod, M.D., F.R.S. *Forensic Medicine.*—E. Headlam Greenhow, M.D., and Thomas Stevenson, M.D.

Our Portrait Gallery.

THOMAS N. R. MORSON.

It was no part of our idea when we commenced the series of life-sketches, the second of which we now offer to our readers, to draw heroes of a colourless classical type, or to let a few paragraphs of mere adulation serve the place of biography; we seek to describe fellow-workers, not demi-gods. Still, the maxim is right, *de mortuis nil nisi bonum;* and if right of those who are passed from our sight, how much more should it be borne in mind when speaking of one still, happily, in our midst, who, after a long and useful career, claims the reward of comparative retirement from public service.

Amongst living pharmaceutists we might search in vain for a representative man so marked in individuality as Mr. Morson, the subject of our present memoir; and we take the occasion of his retirement from the Council of the Pharmaceutical Society as a fitting opportunity to give a brief review of his connection with pharmacy as a profession.

Mr. Morson was born at Stratford-le-Bow, Essex, just at the close of the last century. Having lost his father whilst still a child, he was sent to a school at Stoke Newington, where he remained until he was considered old enough to be placed out to learn a business. At fourteen, he was apprenticed to Mr. Charles Dunn, a retired army surgeon, who kept a retail shop in Old Fleet Market, of which, as was the fashion of the times, he was placed in charge. On the death of Mr. Dunn, about a year afterwards, the business, stock-in-trade, goodwill, and apprentice, were transferred all together to a gentleman who has since become well known, Mr. Henry Morley, the present Senior Warden of the Apothecaries' Company. It is no matter of wonder to those who know the Mr. Morson of to-day, to find that practical surgery and its attendant delights wore no charm in his eyes, or to hear of his craving permission, as an apprentice, to attend the chemical lectures at Guy's Hospital, when conducted by Dr. Marcet, Dr. Babington, and Mr. William Allen; and subsequently those of Mr. Brande, at the Royal Institution; nor need we lament that, from this time forward, chemistry and scientific pharmacy absorbed the energy that must otherwise have been devoted to an uncongenial profession.

In the year 1818, home ties were further shaken by the loss of his mother, and Mr. Morson left London for a time to reside in Paris. He entered the pharmacy of M. L. A. Planche, of the Rue du Mont Blanc (a street which has since gone the way of all old Paris), and for a couple of years or so remained an inmate of the house. M. Planche was one of the editors of the *Journal de Pharmacie*, and is described as an able man and a good chemist; but he does not appear to have recognised the necessity for either study or recreation amongst those in his employ, as we learn that the working hours extended from six in the morning until midnight. Possibly, in the "struggle for existence," none but the "fittest" have been left to tell the tale; and had Mr. Darwin been *the* philosopher of 1820, instead of 1870, we should have suspected the worthy pharmacien of carrying his experimental science into the realms of anthropology, with the idea of endeavouring to improve the race of pharmaceutists by killing off the weaker specimens.

Returning to London in 1821, Mr. Morson found his old master tired of retail business and desirous of devoting himself exclusively to medical practice, and it was arranged that he should succeed to the shop in Fleet Market. These premises sufficed for two or three years, when, with increasing business, he found it necessary to remove to the more commodious pharmacy in Southampton-row which still bears his name.

As early as 1822, Mr. Morson became a member of the Society of Arts, and ere long took an active part in its proceedings; and through association during a long series of years with men eminent in various departments of science —with Faraday and Graham, with Robert Brown, Bowerbank, Edward Forbes, and others—formed a widened sphere of interest and usefulness in branches not directly connected with pharmacy.

In the agitation which resulted in the formation of the Pharmaceutical Society, Mr. Morson was naturally one of the late Mr. Bell's trusted colleagues, and he has held by the Society, through good report and evil report, from its foundation to the present time. In 1844, he was elected Vice-President of the Society, and served in that capacity for four years, Mr. Savory being President during the same period; and in 1848 he became, in turn, its President. Again, on the death of Mr. Bell, in 1859, he was induced to accept the Presidency, and for about two years guided the deliberations of the Council. He has been one of the most constant attenders of the Pharmaceutical Meetings held at Bloomsbury-square; and the "Transactions" of the Society testify to his diligence in contributing to their usefulness. The very first number of the *Journal* contains an abstract of a paper of his on the "Rise and Progress of Pharmacy," read at the June Meeting, 1841; and scarcely a volume has appeared in which his name does not occur in connection with some scientific paper or some information of practical value to the pharmaceutist.

The old shop in Fleet Market would be a place of interest were it still in existence. In its little laboratory, the first Sulphate of Quinine made in England was prepared, and the price charged for it to a wholesale firm still carrying on business, was eight shillings per drachm; here too was manufactured the first English Morphia, and it was invoiced at eighteen shillings per drachm to another well-known wholesale house.

The premises in Southampton-row admitted of an increased manufacture of these and other alkaloids; and after the publication of Reichenbach's experiments on wood tar, Mr. Morson was ready to establish the works in the Hornsey-road for the manufacture of Kreosote which have ever since been in operation. We have heard him tell of buying a sample of kreosote in France, shortly after its discovery, at the rate of twenty shillings per ounce.

Such are the leading pharmaceutical matters with which the object of our memoir has been identified. Each of our readers may point the moral for himself—may judge for himself how much of a successful career to attribute to self-reliance, to early attention to scientific subjects, to the selection of intellectual associates, to perseverance and diligence in business; but if he finds no lesson in what we have written, he is beyond our help.

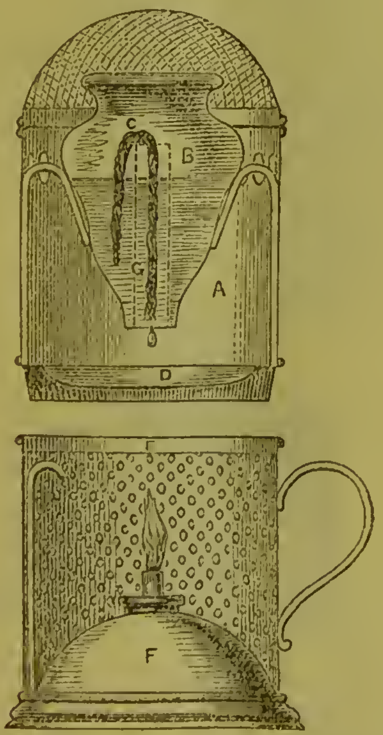
It is not for us to question the wisdom of the senior members of the Council of the Pharmaceutical Society who have determined to retire from service at the present election; but we cannot help feeling, with all our sympathy for younger aspirants, that there will be many a weighty debate in which the longer experience and more extended knowledge of the world these elders have been wont to bring will be greatly missed in their absence.

We may not lift the veil that shrouds home-life, yet in the present instance our notice would be incomplete indeed without passing allusion to a house in Queen-square whose very atmosphere is unostentatious hospitality; nor can it be wrong to add one word in grateful recollection of the lady who till so recently presided there, whose gentle courtesy and kindly welcome lives in the memory of so many, and whose removal left so large a circle of mourners beyond her own household.

SAVORY AND MOORE'S PATENT VAPORISER.

THIS noteworthy invention for the more efficient application of carbolic acid and other fluids to medicinal and sanitary purposes may be fairly described as a realised "happy thought." The instrument when first seen suggests at once the lantern of Guy Fawkes and the domestic flour-dredge, but as its external form is produced by the effective disposition of essential parts, its Doric simplicity will command the respect of utilitarians. It consists of two cylindrical chambers of perforated metal, which fit together like the sections of a coffee percolator. The upper chamber (A) is provided with a hinged dome-shaped cover of coarse wire gauze, a concave bottom of stout tin-plate (D), and four bent brass rods for supporting the moveable glass vessel (B). In the construction of this reservoir the chief novelty of the invention lies. From the bottom of the conical vessel a tube (G) open at both ends, passes to within an inch of the top, so that any liquid poured into the vessel surrounds the tube. When the vaporiser is in action a piece of bibulous cotton-wick (C) conveys the disinfecting liquid from the reservoir by capillary attraction, and delivers it drop by drop from the tube (G) to the hot plate (D). The lower chamber (E) contains a small spirit lamp (F), which is so made that the spirit passes slowly and regularly to the wick, though none of it will spill if the vaporiser be shaken.

The following directions for using the vaporiser are given by the makers:—Detach the upper part of the vaporiser (A).

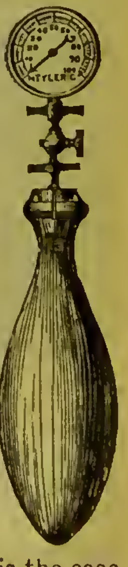


Saturate the cotton wool in the lamp (F) with methylated spirit, and cut off the wick to the level of the tube. Now light the lamp. Remove the glass dropper, and pour into the outer division of it (B) the carbolic acid or other liquid to be used, taking care that none of it escapes into the centre tube (G). Then dip the wick into the fluid so as to completely moisten the whole of it, and by means of the small tweezers insert one end of the moistened wick into the centre tube (G) of the dropper, and pass it down to the bottom, leaving the rest of the wick in the liquid, as shown in the sketch. Having replaced the dropper in the upper part of the vaporiser, this is now refixed over the lamp, and the vaporisation immediately begins, by the liquid falling, drop by drop, on the hot plate (D), and will continue until the whole of it is diffused in vapour. When it is desired to discontinue the process, it is only necessary to withdraw the wick (with the aid of the tweezers) from the centre tube of the dropper, and leave it in the liquid until it is again required for use, extinguishing the lamp.

So much has been written on the disinfecting and antiseptic properties of carbolic acid or phenol, that we need not stop to consider the numerous circumstances under which the diffusion of its vapour would be attended with beneficial effects. To disinfect a room with bedding and clothes, after small pox, fevers, and other infectious diseases, the vaporiser should receive a full charge of carbolic acid (about one ounce) and be placed on the floor in the centre of the room, while the clothes and bedding should be arranged so that they may be exposed to the action of the vapour. When the vaporisation commences the doors and windows should be closed, and not be opened for four or five hours. This disinfecting operation should be repeated morning and evening for three days, after which the air should be freely admitted into the room for several days. Dr. Crace Calvert's pure medicinal carbolic acid is generally prescribed. For those who object to the smell of this potent agent, Messrs. Savory and Moore prepare an AROMATIC or PERFUMED CARBOLIC ACID which diffuses an agreeable odour of incense, while it acts like the pure chemical.

NEW GAUGE FOR TESTING THE PRESSURE IN SODA-WATER BOTTLES.

THE engraving shows a new form of testing gauge, introduced by Messrs. Hayward, Tyler, and Co., of Whitecross-street, London, for investigating the pressure of gas in bottles of soda-water. An instrument of this kind is valuable to every soda-water maker, as it ensures evenness in the quality of the aërated waters produced; and scarcely less so to those who have to purchase large quantites of these articles. It consists of a small cock with a hollow screw for penetrating the cork. The end of the screw is closed by a pointed piece of metal, which falls out into the bottle as soon as the cork is penetrated. Above the cork is attached a small dial pressure gauge, which, when the cork is turned on, at once registers the pressure in the bottle. By detaching the gauge, the cock may be used for drawing off the soda-water, or employed as a corkscrew to draw the cork. The whole packs in a small leather case for the pocket. The observations made with this instrument on various kinds of soda-water, lead to some curious results, and the tendency of them is to show that an *excessive* pressure in the bottle is rather injurious than otherwise to the quality of the water for drinking, as it causes such violent effervescence when the cork is drawn, that more of the gas is wasted before it can be drank than is the case at a moderate pressure.



BAILEY'S PATENT PYROMETERS.

For the estimation of high degrees of temperature which are beyond the range of the indications of ordinary thermometers, instruments termed *pyrometers* are required. Of those the best known is Daniell's Register Pyrometer which has been employed in many important researches connected with metallurgy. The indications of this instrument depend on the difference in the amount of expansion between a rod of platinum and a bar of black-lead ware. Only those who are accustomed to work with instruments of precision can manage this pyrometer, and consequently its use is unknown in the arts. Mr. Bailey, of the Albion Works, Salford, knowing that a streng and handy heat measurer has long been a desideratum, has devoted much attention during the last twelve years to researches leading to the production of such an instrument, and we are glad to say that the result of his labours has been most satisfactory. He is now manufacturing pyrometers adapted for various purposes under patents in England, France, and America. The most novel form of his invention is the Laboratory Pyrometer, which serves to indicate temperatures up to 800° Fahrenheit. This instrument consists of a tube fifteen inches long surmounted by a dial two and a half inches in diameter, and is a reduced copy of the larger pyrometer which is now extensively used for indicating the temperature of bakers' ovens. It is adapted for dipping into boiling oil, tar, paraffin, or other hot liquids, in open vessels or stills, and for a variety of purposes in the laboratory. Being constructed of metal it is not liable to break, and on this account can be used with advantage for what may be called thermometrical purposes, that is to say for indicating temperatures below the boiling point of mercury. The principle of Mr. Bailey's pyrometer is the difference in expansion between two different metals or between metal and porcelain. The temperature is plainly shown by the index of the dial. One important point connected with this pyrometer is the fact that it is adjustable, and can be set to the temperature of the air before it is used.

HERBERT'S GLUE POT.

There will not be two opinions about the usefulness of this little invention. It is so simple that a very few lines will suffice to describe it; but it has been so long wanted that, when it once gets into a house or an office, it will not easily be removed. A piece of the best glue is fixed in the top, under the lid, and by the side of it the brush passes into a little tin of water. By this arrangement the whole is kept clean and ready for use. The little apparatus sells for sixpence, and we would advise chemists to get a few and show them. They will sell themselves.

PULVERMACHER'S BATTERIES.

It can only have been through real merit that the inventions of Mr. Pulvermacher, for the convenient application of electricity to the human frame, should have won such general favour with the chief members of the medical profession. Sir William Fergusson, Sir Henry Holland, Sir Charles Locock, and many other eminent physicians, have expressed their satisfaction with these appliances; and indeed, it scarcely seems possible to obtain control over electricity, as a remedial agent, by devices more simple or more effective than those adopted by Mr. Pulvermacher. It is entirely out of our province to discuss the usefulness of electricity as a curative agent, or to speculate on its probable future employment and value in this direction. We know that the electric current can produce striking physiological effects, and we know that many eminent scientific practitioners in different countries have reported favourably on its therapeutic properties. We also know that the name of Pulvermacher is associated in the standard treatises on electricity with such names as Dujardin, Duchenne, and Ruhmkorff. We gladly took advantage, a short time ago, of a polite invitation to examine the various forms of bands and batteries which represent Mr. Pulvermacher's system, and could not but admire the ingenious construction and elegance of all. The smallest of the bands, the effects of which are hardly perceptible to the body, is still powerful enough to decompose water, and from this, in gentle gradations, more powerful batteries are ranged up to those which are only applicable for acute diseases, and are not intended for constant wear. We do not doubt but that Mr. Pulvermacher would extend to any chemist the same courtesy that we received in looking over his inventions at 200, Regent-street.

MASON'S DEFINITE OIL MEASURE.

The inventor of the measure shown in the annexed drawing was, until recently, an engineer in Bombay, but is now residing at the village of Farnsfield, in Nottinghamshire, and this is the result of his leisure hours. It certainly strikes us as being extremely useful as well as ingenious. The paraffin or other liquid is supplied from a cistern above, which may be either fixed or moveable. From this the liquid is conducted into the measure, and reaches the exact point required by a process of "levelling up." A piston floats on the surface of the oil, and a graduated brass rod attached to this piston passes through the top of

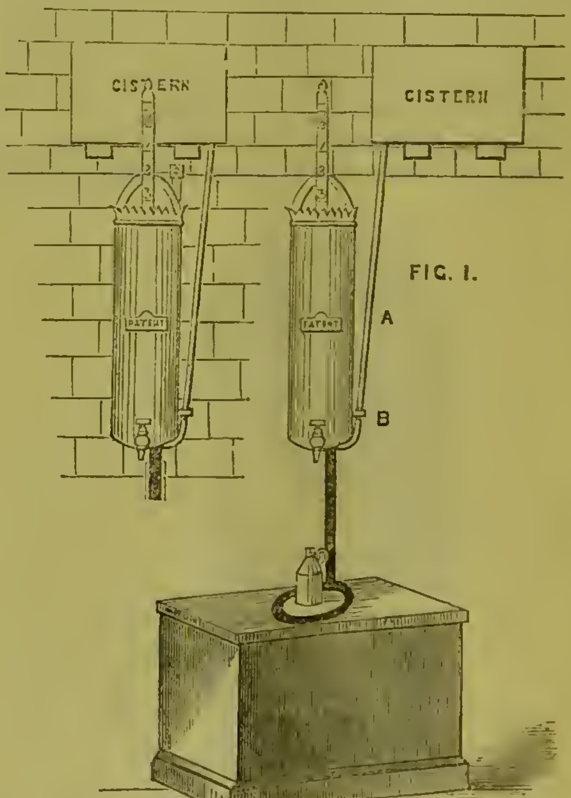


FIG. 1.

the measure, above which two fine pointers meet it, and indicate exactly the quantity in the measure.

By this plan it is claimed a more exact measurement is secured, and the plan is so simple that but little cost is involved, and no complication can ensue. The measure in the sketch is one which will show from half pint to half gallon, but they are made in all sizes. Prices are quoted in an advertisement.

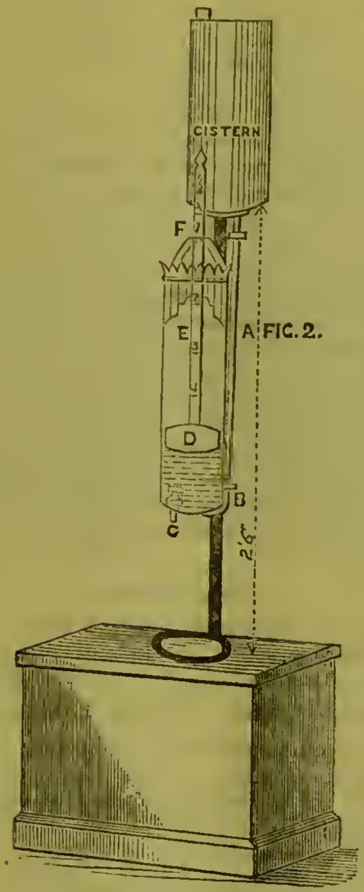
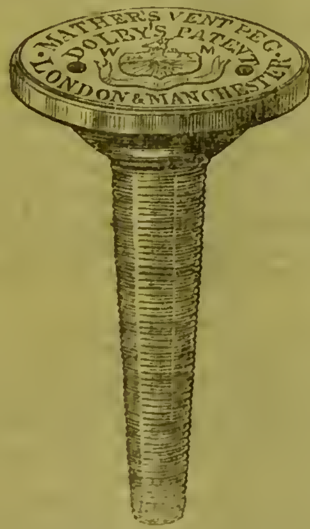


FIG. 2.

MATHER'S VENT-PEG.

We introduced this novelty to the trade some six months ago, and described the application of Dolby's Patent Valve to the vent-peg in such a manner that air is drawn in in just such a proportion as is required, while none can, by any possibility, pass out. The clever invention has been lately considerably improved by the vent-peg being manufactured in brass, with a tapering screw stem. It is now not only perfect in its principle, but, apparently, everlasting in its wear.



Corner for Students.

CONDUCTED BY RICHARD J. MOSS.

The chemical formulæ employed in this section are based upon the new system of atomic weights, unless the use of the older system is specially indicated. In the *British Pharmacopœia* the symbols corresponding to those adopted here are printed in heavy Clarendon type. The new editions of Fownes's *Manual of Chemistry*, and Attfield's *Chemistry: General, Medical, and Pharmaceutical*, supply the data required for calculations, and are recommended as text-books.

QUESTIONS.

First Division.

I. Almonds.—Sweet almonds when bruised with water do not emit the peculiar odour which characterises bitter almonds. How do you account for this difference?

II. Mineral Waters.—What are the distinctive constituents of Chalybeate, Saline, and Sulphurous mineral waters, and by what chemical tests may they be distinguished?

III. Qualitative Analysis.—In the preliminary examination of a salt, a portion of it is treated with a small quantity of sulphuric acid, and heated; supposing it to be either a sulphide, chloride, iodide, bromide, chlorate, or oxalate, how should it behave under each supposition?

IV. Arsenicum.—Describe some of the more important reactions by which arsenicum may be distinguished from antimony.

V. Boracic Acid.—Mention some of the principal properties of this acid and its salts. How may borates be detected in a solution?

Second Division.

I. Infusum Calumbæ, *B.P.*—Why is cold water employed in the preparation of this infusion?

II. Arsenicum—Some green colouring matter is scraped from a room paper, how may it be ascertained whether it is arsenical or not?

III. Potassium Chromates.—How may the yellow chromate be obtained from the red salt? Express in the form of symbolic equations the reactions which take place when solutions of these salts are added to solutions of barium nitrate.

IV. Absorption of Gases.—What relation exists between the quantity of a gas, or of a mixture of gases, absorbed by water and the pressure to which the gases are subject.

V. Specific gravity.—A rectangular vessel is 18 inches long, 10 inches broad, and 8 inches deep; how many pounds of Liquor Potassæ, *B.P.*, is it capable of holding? What weight each, in pounds, of the officinal hydrochloric, nitric, and sulphuric acids would this quantity of potassium hydrate solution be capable of neutralizing? (1 gallon contains 277·274 cubic inches).

ANSWERS.

First Division.

I. Ferri Phosphas, *B.P.*—According to the officinal process for the preparation of this substance, three ounces of ferrous sulphate, dissolved in two pints of boiling distilled water, are mixed with two and a half ounces of disodic orthophosphate, and one ounce of sodium acetate, dissolved in an equal quantity of boiling distilled water; this operation results in the precipitation of ferrous phosphate, in the presence of free acetic acid, thus:—

$$3FeSO_4 + 2Na_2HPO_4 + 2NaC_2H_3O_2 = Fe_3(PO_4)_2 + 3Na_2SO_4 + 2HC_2H_3O_2.$$

The sodium acetate is employed here because otherwise free sulphuric acid would be produced, and thus a portion of the ferrous phosphate dissolved, whereas this salt is insoluble in acetic acid. The theoretical product of this process is 1·25 ounce. The molecular weight of the sodium phosphate, including twelve molecules of water, is 358; the same number represents the molecular weight of ferrous phosphate; and as two molecules of the former produce one molecule of the latter, it follows that 2·5 ounces of sodium phosphate should produce 1·25 ounces of ferrous phosphate.

The three ounces of ferrous sulphate ordered is slightly in excess of the quantity required theoretically, and consequently a portion of it remains undecomposed.

II. Liquor Chlori, *B.P.*—22·4096 per cent. of the chlorine produced in the officinal process for the preparation of this solution is absorbed in saturating the thirty ounces of distilled water.

The reaction which takes place when manganese dioxide is gently heated with dilute hydrochloric acid may be thus represented,—

$$MnO_2 + 4HCl = MnCl_2 + 2H_2O + Cl_2.$$

The theoretical product in this case must be calculated from the quantity of manganese dioxide employed, viz., one ounce, as an excess of hydrochloric acid is ordered. The molecular weight of manganese dioxide is 87, and one molecule of it decomposes four molecules of the acid, and liberates two atoms of chlorine, weighing 71. Considering these weights as ounces, and dividing them by 87, we have one ounce of manganese dioxide producing $(\frac{71}{87} =)$ ·8161 of an ounce of chlorine. Now the officinal solution contains in one fluid ounce, or 439 grains by weight, 2·66 grains of chlorine, and consequently (439·0 — 2·66 =) 436·34 grains of water; therefore the weight of chlorine required to saturate thirty fluid ounces, or 13125 grains of water, is found by the following proportion:—

$$436·34 : 13125 = 2·66 : x \therefore x = 80·012.$$

We found that ·8161 of an ounce, or 357·04375 grains of chlorine, were produced; therefore 22·4096 per cent. of it is absorbed, according to the following proportion:—

$$357·04375 : 100 = 80·012 : x \therefore x = 22·4096.$$

III. Qualitative Analysis.—The solid body is barium nitrate. The fact that the substance does not give a precipitate with silver nitrate, indicates the absence of a number of acids, of which the following are the most important: arsenious, arsenic, boracic, hydrobromic, carbonic, hydrochloric, chromic, phosphoric, sulphurous, silicic, and hydrosulphuric.

The precipitate obtained with ammonium carbonate, after the addition of the other reagents, may consist of barium, strontium, or calcium carbonates. The yellow precipitate, on the addition of potassium chromate to the acetic acid solution of this precipitate, indicates that barium is the metal present. As barium is present, sulphuric acid must be absent, as the substance was soluble in water.

That nitric acid is present, is proved by the appearance of red fumes, consisting of nitrogen tetroxide (NO_2), and nitrogen trioxide (N_2O_3), the products of the oxidation of nitrogen dioxide (NO), which is evolved when nitrates are heated with strong sulphuric acid.

IV. Alcohol.—The substance is Propenyl alcohol, Glyceric alcohol, or Glycerine, $C_3H_8O_3$.

By dividing the weights of each of the several constituents in 100 parts of the substance, by their relative atomic weights, we obtain numbers representing their relative atomic proportions, and corresponding with the above formula, thus:—

C 39·13 ÷ 12 = 3·261
H 8·7 ÷ 1 = 8·7
O 52·17 ÷ 16 = 3·261

When glycerine is mixed with potassium hydrate and gently heated, hydrogen is given off, and a white mass left consisting of potassium acetate and formiate. The glycerine is probably first dehydrated, acrylic aldehyde being produced, thus:—

$$C_3H_8O_3 — 2H_2O = C_3H_4O.$$

This substance, in contact with potassium hydrate, yields potassium acrylate and hydrogen, thus:—

$$C_3H_4O = KHO = C_3H_3O_2K + H_2.$$

Finally, the potassium acrylate is decomposed with a further evolution of hydrogen, and the production of the white mass previously alluded to, as in the following equation:—

$$C_3H_3O_2K + KHO + H_2O = C_2H_3O_2K + CHO_2K + H_2.$$

V. Sulphurous and Hyposulphurous Acids.—Sulphurous acid (H_2SO_3) is produced by passing sulphurous anhydride (SO_2) into water, which, when cold, dissolves about thirty times its volume of the gas. This acid acts as a powerful reducing agent, and possesses valuable bleaching properties. By contact with air it is readily converted into sulphuric acid. The sulphurous radical (SO_3) is bivalent, and hence forms acid and normal sulphites; many of the sulphites are analogous in composition to the corresponding carbonates, and are isomorphous with them; those of the alkali metals are soluble in water. The sulphites are decomposed by nearly all acids, except carbonic acid, and boracic acid; nitric acid converts them into sulphates.

This acid may be detected in a solution (sulphides being absent) by adding a few fragments of zinc, and then hydrochloric acid, when hydrogen monosulphide will be evolved, and may be recognised by its blackening paper moistened with a solution of lead acetate.

Hyposulphurous acid ($H_2S_2O_3$) is scarcely known either in the free state or in combination with water. The hyposulphites are comparatively unimportant, with the exception of those of the alkali metals, which possess the property of dissolving certain insoluble salts of silver, the principal of which are the chloride, bromide, and iodide; the double hyposulphite of sodium and silver posesses a remarkably sweet taste. Sodium hyposulphite is valuable in bleaching as an "antichlore, for removing the last traces of chlorine from goods bleached therewith. It is also valuable in quantitative analysis, on account of the property which it possesses of removing iodine from the so-called starch iodide, thus destroying the blue colour, and producing sodium tetrathionate ($Na_2S_4O_6$) and sodium iodide (NaI).

To detect salts of this acid in a solution, add hydrochloric acid, when, if a hyposulphite is present sulphurous acid should be liberated, and sulphur precipitated as a yellow—not white—powder.

Second Division.

I. Hydrargyri Perchloridum, *B.P.*—The yellow precipitate which the aqueous solution of this substance gives with potassium hydrate is mercuric oxide (HgO), thus:—

$$HgCl_2 + 2KHO = HgO + 2KCl + H_2O.$$

The white precipitate produced by adding ammonia to an aqueous solution of mercuric chloride, the latter being in excess, consists of a double chloride of mercurammonium and mercury ($NH_2HgCl, HgCl_2$): but if the ammonia is in excess the precipitate consists of *infusible white precipitate*, mercurammonium chloride, or the officinal Hydrargyrnm Ammoniatum, *B.P.* (NH_2HgCl). The following equations represent these reactions:

$$2HgCl_2 + 2NH_4HO = (NH_2HgCl, HgCl_2) + NH_4Cl + 2H_2O,$$
$$HgCl + 2NH_4HO \quad NH_2HgCl + NH_4Cl + 2H_2O.$$

The curdy white precipitate produced by silver nitrate is argentic chloride, thus:—

$$HgCl_2 + 2AgNO_3 = Hg(NO_3)_2 + 2AgCl.$$

II. Ozone.—This substance which has not as yet been obtained in an isolated state, may be produced by submitting dry air or oxygen gas, contained in a suitable vessel, to the action of an electric current; by the slow oxidation of phosphorus in a moist atmosphere; by subjecting a mixture of air and vapour of ether to the influence of a temperature of about 240^0 C., or by adding powdered potassium permanganate, in small quantities at a time, to strong sulphuric acid.

The properties of ozone and those of chlorine are in many respects similar. It has an odour like that of chlorine, is irrespirable, possesses very high oxidising powers, and bleaches vegetable colouring matters. Ozone is very slightly soluble in water—to which it imparts some of its properties—but insoluble in solutions of acids and alkalies; aqueous solutions of potassium iodide and of pyrogallic acid absorb it readily, the former with the liberation of iodine. Ozone is converted into ordinary oxygen at temperatures exceeding 100^0 C.

III. Attraction.—The attraction of gravitation influences all known matter in proportion to its quantity, and operates at enormous distances, thus differing from the attraction of cohesion and chemical attraction; both of which forces influence matter at short distances only, especially the chemical force, which operates only on matter brought into very close proximity. Cohesion is exerted most on similar, and least on dissimilar forms of matter, irrespective of their relative proportions, and does not alter their individual properties. Its influence is most exerted on solids, less on liquids, and not at all on gases. Chemical attraction operates on mathematical proportions of matter, and exhibits its greatest intensity with substances possessing the most dissimilar properties, and the least complexity of composition, producing compounds, with properties not necessarily related to those of their constituents.

IV. Gases.—When ammonia is subjected to a series of electric sparks its volume is doubled, owing to the decomposition of the gas, thus :—

$$2NH_3 = N_2 + 3H_2.$$

When oxygen is treated in a similar manner, a condensation of about one-twelfth takes place, and a portion of the oxygen is converted into ozone.

When electric sparks are passed through marsh-gas for some time, a deposition of carbon takes place, and subsequently the volume of the gas is nearly doubled owing to the liberation of its hydrogen, thus :—

$$2\,CH_4 = C_2 + 4\,H_2.$$

The electrolytic decomposition of marsh-gas is attended with the production of a small quantity of ethine (C_2H_2).

V. Specific Gravity.—The weight required to submerge the piece of wood is 2·077 pounds.

The wood when submerged displaces a volume of water equal to its own bulk, and as the sp. gr. of the wood is ·325 it follows that the weight of water displaced is ($\frac{1}{\cdot325}$=) 3·077 pounds, the weight of the wood being 1 pound. But the wood when floating displaces its own weight of water, viz., 1 pound, therefore the weight required to submerge it is (3·077—1=) 2·077 pounds.

PRIZES.

The First Prize for the best answers to the questions of the First Division published in our April number has been awarded to

Richard William Griffith (B.P.), 146, High-street, Southampton.

The Second Prize for the best answers to the questions of the Second Division has been awarded to

H. Dunn, Mr. Butterfield's, Shipley.

Marks awarded for Answers.

First Division.

	I.	II.	III.	IV.	V.	E.	Total.
B. P. (*1st prize*)	8	7	8	3	7	3	36
A. Fraser	8	5	8	4	7	3	35
Henry Forster	8	6	4	5	6	2	31
J. W.	5	5	6	5	6	3	30
Beginner	7	1	6	5	8	2	29
J. H. Watson	8	1	7	2	7	3	28
Otho	4	0	7	5	8	3	27
N. Coaker	5	5	5	4	6	2	27
J. S. E.	5	6	5	0	7	3	26
W. Maddocks	4	0	7	2	7	1	21

Second Division.

	I.	II.	III.	IV.	V.	E.	Total.
H. Dunn (*2nd prize*) ..	6	7	6	5	4	3	31
G. Spiers	6	5	7	4	5	2	29
F. W. Fletcher	6	7	6	5	1	3	28
H. B. W.	6	5	7	4	4	2	28
A. Weddell	6	5	6	5	4	1	27
J. Rigby	6	8	7	2	0	3	26
G. H. K.	6	5	5	4	4	2	26
J. S.	6	5	5	3	4	2	25
Bos	6	6	4	3	4	1	24
J. G. A.	6	5	3	3	3	2	22
W. B. Baron	6	5	0	3	4	2	20
W. J. Smith	1	3	4	5	4	2	19
S. T. S.	6	4	5	3	1	0	19
H. Grimwood	4	6	2	3	1	2	18
N. W. H.	6	5	3	3	0	1	13
W. Laugher	2	4		1	4	1	18
J. R.	5		4	1	4	1	18
J. M. J.	5	2	4	1	3	2	17
Josephus	2	3	4	5	1	2	17
G. W. Joseph	3	5	5	2	1	1	17
R. L.	2	3	5	3	3	1	17
G. Lant	2	3	4	3	2	1	15
G. H. Holley	2	2	5	1	0	2	12

TO CORRESPONDENTS.

⁂ All questions forwarded to us for publication in this "Corner for Students" should be accompanied by the answers which the propounders believe to be correct. Communications should include the names and addresses of the writers; those which reach us after the first day of the month will be disregarded.

Prizes.—The students to whom prizes are awarded, are requested to write at once to the publisher, naming the book they select, and stating how they wish it forwarded.

Beginner.—We require accuracy in numerical results; fractions should be expressed in three decimal places, and due allowance made for the remainder.

Otho.—I. You evidently misunderstood the latter portion of this question, and also question II.

J. S. E.—II. One fluid ounce of the solution contains 2·66 grains of chlorine, but it does not follow that each fluid ounce of the water employed absorbs 2·66 grains of chlorine, as you may see by the printed answer.

W. Maddocks.—II. The hydrochloric acid employed contains only 31·8 per cent. of real acid; the quantity of manganese dioxide ordered is not sufficient for the decomposition of all the acid.

F. W. Fletcher—V. You did not take the weight of the wood into consideration, consequently your result was one pound astray.

A. Weddell.—No new edition of the book alluded to has been published lately; we cannot say whether there is likely to be one soon or not.

James Rigby.—Several of your answers were very good, but not sufficiently concise.

W. B. Baron.—Yes; any of our correspondents may. See the notice at the head of this column.

S. T. S.—You will save us some trouble by sending your name and address in full, with each communication.

H. Grimwood.—I. You substituted the formula of calcium hydrate, for that of potassium hydrate.

N. W. H.—The marks awarded under the heading E, are for neatness displayed in manuscript, clearness in explanation, and general excellence.

W. Laugher.—I. According to your explanations nothing remains in solution, the products being all precipitates; if such was the case there could be no such thing as chemical analysis.

J. R.—You overlook the fact that the given measurement is cubic, and not superficial, the cube root of your result is nearer to the answer.

R. L.—The postage on your paper was underpaid.

G. H. Holley.—Your symbolic representations of the reactions are not equations, as the number of atoms on both sides is unequal with one exception.

Books offered as First Prizes.

Attfield's *Chemistry: General, Medical, and Pharmaceutical.* (Van Voorst.)
Brooke's *Elements of Natural Philosophy.* (Churchill.)
Conington's *Handbook of Chemical Analysis;* with Tables of Qualitative Analysis adapted to the same. (Longmans.)
Eliot and Storer's *Manual of Inorganic Chemistry.* (Van Voorst.)
Fownes's *Manual of Elementary Chemistry.* (Churchill.)
Fresenius's *Qualitotive Anolysis.* (Churchill.)
Galloway's *Qualitative Analysis.* (Churchill.)
Ganot and Atkinson's *Elementary Treatise on Physics.* (Longmans.)
Garrod's *Materia Medica;* with Modern Chemical Notation. (Walton.)
Noad's *Chemical Analysis, Qualitative* and *Quantitative.* (Reeve.)
Northcote and Church's *Qualitative Analysis.* (Van Voorst.)
Odling's *Outlines of Chemistry.* (Longmans.)
Royle and Headland's *Materia Medica.* (Churchill.)
Williamson's *Chemistry for Students.* (Clarendon Press.)
Barff's *Introduction to Scientific Chemistry.* (Groombridge).

[Any other scientific book that is published at a price not greatly exceeding half-a-guinea may be taken as a first prize.]

Books offered as Second Prizes.

Bloxam's *Laboratory Teoching.* (Churchill.)
Church's *Guide for Students in Agricultural Chemistry.* (Van Voorst.)
Galloway's *First Step in Chemistry.* (Churchill.)
Gill's *Chemistry for Schools.* (Walton.)
Hofmann's *Introduction to Modern Chemistry.* (Walton.)
Huxley's *Lessons in Elementary Physiology.* (Macmillan.)
Oliver's *Lessons in Elementary Botany.* (Macmillan.)
Orme's *Introduction to the Science of Heat.* (Groombridge.)
Potts's *Elements of Euclid.* School Edition. (Longmans.)
Roscoe's *Lessons in Elementary Chemistry.* (Macmillan.)
Wormell's *Elementary Course of Mechanics.* (Groombridge.)
Wurtz's *History of Chemical Theory.* Translated by Watts. (Macmillan.)

[Any other scientific book which is sold for about five shillings may be taken as a second prize.]

THE MONTH

LONDON CHEMISTS' ASSOCIATION.

On Thursday, March 31st, the Vice-President, Mr. Sands, in the chair, a paper was read by Mr. Weaver on the

WINES OF THE PHARMACOPŒIA,

being the first of a series of papers on the different classes of preparations in the British Pharmacopœia.

Mr. Weaver, in commencing, sketched the history of medicinal wines, noticing the peculiarities of these preparations in different Pharmacopœias. Sherry, he said, was most generally the official menstruum, but red wine was also ordered in many instances. Two wines were used in the British Pharmacopœia, sherry and orange wine, the latter being described as a "wine made in Britain by the fermentation of a saccharine solution to which the fresh peel of bitter orange has been added," and containing about 12 per cent. of alcohol. This wine was introduced for making Vin. Quiniæ and Vin. Ferri Cit.

Mr. Weaver then proceeded to speak more particularly about Vin. Ipecac. and the Iron wines. Vin. Ipecac. he thought an unfortunate preparation; no matter how or with what wine it was made, if it did not turn turbid it at least deposited. He had made it, as Johnson seemed to advise it in his paper read before the Pharmaceutical Conference, with rectified spirit and proof spirit, adding four grains of tartaric acid to each ounce. He found that he obtained tinctures that remained clear, but which deposited nevertheless. Rectified spirit made a very pale tincture, less extractive matter being obtained with it. With regard to the iron wines, he thought that Vin. Ferri Cit. was a nice preparation, and it enabled medical men to prescribe a certain quantity of iron. He did not think orange wine had any advantage over sherry. He did not see the use of the introduction of orange wine into the Pharmacopœia at all, especially as the Vin. Quiniæ made with it never kept bright and was continually depositing. Sherry would have done quite as well, and if the flavour of orange was desired some tincture of orange might have been added. He thought it would have been better to have left iron wine as it was in the 1864 Pharmacopœia; although it deposited a good deal, still it contained more iron than that made with wine; it was more quickly made also.

Mr. Weaver summed up thus:—Wines are not good menstrua for medicinal substances; the proportion of alcohol in them varies much; little dependence can be placed on what they contain, and being expensive they are liable to be adulterated. They were recommended because the spirit in them was "softened down," and they were not to intoxicating as spirit; but that argument, although it held good as regards the British Pharmacopœia, did not with others in which rectified spirit is frequently ordered to be added. He should like to see wines abolished from the Pharmacopœia, with, perhaps, the exceptions of Vin. Quiniæ, for which there might be a better form, and Vin. Ferri, which was a nice preparation for children.

The CHAIRMAN, in opening the discussion, referred to Mr. Weaver's remarks on Vin. Ipecac., and said he thought a Syr. Ipecac., which was a more stable preparation, should be introduced into the Pharmacopœia; it would answer better as an emetic for children, and for cough mixtures would supply the place of any syrup required.

Mr BROWNEN thought that the progress of pharmacy demanded that solvents of uncertain composition and changeable character should be replaced by more stable fluids, and that to no class did this apply more than to the wines. With regard to Vin. colchici, the dried corm he had found to vary in the amount of Colchicia from traces to none at all, and in many samples of wine he had failed to find any. Colchicia being so easily decomposed, Mr. Brownen thought a succus on the plan of Suc. Conii would be a better preparation, did not the multiplicity of colchicum preparations point out that great uncertainty of action existed among them. In making Vin. Ferri, Mr. Brownen in his communication pointed out that the jar used should never be more than two-thirds full, and that it should be closed with a porous cork, not a glass stopper; if ever a wine (fictitious?) was found not to "colour," the addition of a little cream of tartar would set it right.

Mr. PORTER thought quinine wine an unsatisfactory preparation, there was too much acid ordered in it, and after standing and filtering, as Mr. Weaver said, it became unsightly and deposited. With regard to Vin. Ferri, he disagreed with Mr. Weaver, and held that the present form was the better. He made several other practical observations.

Mr. BEYNON made some remarks upon the so-called wines of the P.L., 1824, which were mere mixtures of spirit and water, the varying proportions of which even Phillips could offer no reason for. He thought a mixture of spirit and water, with perhaps some vegetable acid, would answer in nearly every case instead of sherry. He agreed with Mr. Weaver that there should be a form for iron and quinine wine; but some of the wines, he thought, would have been left out of a purely English Pharmacopœia.

Many other members joined in the discussion.

The CHAIRMAN, in bringing the proceedings of the evening to a close, remarked upon the interesting and instructive evening that had been spent, and hoped that the discussions on future evenings would be as good and practical.

On Thursday, April 7th, a general meeting was held, Mr. Palmer occupying the chair. Several gentlemen in the provinces and abroad, most of them having been connected with the Association, were elected corresponding members.

Mr. BEYNON read a paper on the

ESSENCES AND SPIRITS OF THE PHARMACOPŒIA.

He began by remarking that spirits were mostly alcoholic solutions of volatile principles, formerly always prepared by distillation; but that the larger number of spirits now were simply made by dissolving essential oils in alcohol. In the B.P. there were only four spirits made by distillation, and only one of these from vegetable substances, the others being nearly all solutions of certain oils, which in the L.P. were mostly ordered to be distilled from the plants or parts of plants yielding them. Rectified spirit was used for some, proof spirit for those the oil of which would not rise at the temperature of boiling water alone. Many of the alcoholates of the Codex, Mr. Beynon said, resemble these old P.L. spirits. Mr. Beynon first noticed spirit itself, Spt. Rect., and made some remarks upon the tests for its purity. He thought it a great pity that Government did not allow a spirit to be made that might be used in some manufactures in the place of grain spirit. Before speaking of the other spirits, the essences were disposed of. They were two in number—Ess. Anisi and Ess. Menth. Pip. Why they were inserted, and why of such a strength, he did not understand. The oil in them separated immediately on addition to water; neither were they fit for sale over the counter. After noticing Spt. Ætheris, Spt. Æther. Nit. came next in review. He thought it a great improvement: the P.L. was little more sometimes than spirit. Liebig proposed nitric acid and starch for making it, but the product obtained was contaminated with prussic acid—a sufficient objection. Sulphuric and nitric acids and the vapour of nitrous acid had been tried, but without success. The British Pharmacopœia, 1864, struck out a new plan, and though that failed through the uncertainty of the composition of the nitrite of soda, the idea of combining nascent nitrous acid with ether was good, and might have helped Professor Redwood to the present elegant plan. The two ammoniacal spirits of the Pharmacopœia came next in order. In the aromatic spirit there was now no double decomposition to go on in the still, and oil of cinnamon, which discoloured the P.L. preparation, was left out. The sal volatile of the Codex, Mr. Beynon remarked, was somewhat similar to the London, vanilla being an additional flavouring matter in it: the Edinburgh and Dublin preparations were solutions of pure ammonia. The fœtid spirit of ammonia contained the sulphur oils of assafœtida; a small quantity of sulphocyanide of ammonium existed in it, shown by its action with iron. Spt. Armoraciæ Co. he thought a light of other days, doomed soon to disappear from the Pharmacopœia, if nations were to be judged by their Pharmacopœias. Whilst we are getting rid of scurvy, France, he said, must be eaten up by it, the antiscorbutic juices, tinctures, spirits, etc., of the Codex being legion. With regard to the spirit formed by solution of oils, Mr. Beynon thought the proportions good, but that one form would have done for the lot, instead of so much repetition. After Spt. Cajuputi, directions might have been given for preparing the others in the same proportion. Spt. Camphoræ, Chloroformi, Tenuior, and Vini Gallici were lastly treated of. Spt. Camphoræ was somewhat weaker, perhaps through metrical considerations; Spt. Chloroformi, Mr. Beynon said little about, discussions having already taken place upon it; Spt. Tenuior was, in most instances, a more powerful agent of extraction than Spt. Rect.; and with regard to Spt. Vini Gallici, he read the following advertisement, to show that it was very likely not to be what the Pharmacopœia states:—"Brandy Essence, for making brandy, per lb., 22s.; 20 ozs. of this essence, added to 70 gallons of spirits of wine (56 over proof) and 30 gallons of water (distilled if possible), in which 4 lbs. of carefully-despumed sugar has been dissolved, will produce 100 gallons of superior brandy. Colouring matter, to produce either pale or brown brandy, per lb., 1s. 4d."

The CHAIRMAN said he thought a form of one in ten would have been best for the essences. If retained in a future Pharmacopœia, perhaps more would be added; essences were frequently in demand.

Mr. PORTER did not see the use of essences at all.

Mr. WILLMOTT made some remarks about sal volatile, and other gentlemen took part in the discussion.

On Thursday, April 14th, Mr. Beedzler in the chair, a paper was read by Mr. PORTER on the

LINIMENTS OF THE PHARMACOPŒIA.

He said the liniments were much improved, but there were of course a few unsatisfactory preparations, some of which had occasioned much discussion. He then went through the liniments alphabetically. Lin. Aconiti, he said, was introduced into the Pharmacopœia instead of a strong tincture. He gave full directions as to the crushing and reducing the root easily, and without causing any ill effects to the operator, and spoke of the modes of maceration and percolation best to adopt for this liniment and Lin. Belladonnæ, noticing also the great difference in the quantity of spirit used to obtain the desired result; and referring to some tables by Mr. Gissing, of Wakefield, upon the matter, he put this question to the meeting—Can water be safely used for displacing spirit? Lin. Ammoniæ next received attention. He considered the quantity of ammonia in the present form was not enough; the product was so thick that it would scarcely run. He would like to see the P.L. proportions for making it restored. Lin. Calcis, he thought, would be better if made with linseed oil, as in the "Carron Oil." Lin. Camphoræ came next. Lin. Camphoræ Co.: Mr. Porter asked why it was made so much stronger of ammonia. Lin. Chloroformi received but few remarks. With regard to Lin. Crotonis, he did not understand why such an alteration was made in the formula. Lin. Hydrargyri he commented upon at some length, and asked if it could not be improved. Lin. Iodi he thought a good addition. He made some remarks upon the use of camphor in it and other liniments. He thought it a desirable addition to distinguish liniments from tinctures. Mr. Martindale's remarks upon this liniment were criticised. Glycerine might be a desirable addition, but a medical man could easily order it to be added if desirable. He did not agree with leaving out the camphor for it. Lin. Opii, Mr. Porter said, precipitated very much, especially now, when such a quantity of Tr. Opii is in it. He inquired the nature of the precipitate. The unfortunate Lin. Potas. Iod. c. Sapone was treated of at some length. After reading communications from Messrs. Smith (of Cheltenham), Borland, Francis, Martindale, and others, that have appeared in the various journals, and giving his own experience in making this liniment, he summed up with the following: That we had been misled in the form, and he asked what should the product be like, for that determined what soap should be used. If the product was to be opaque and like cold cream, we must use a soda soap, containing stearic acid, such as curd soap, or one containing palmitates, as proposed by Mr. Borland; but if the product was to be soft, gelatinous, and semitransparent, a potash soap must be used, which should be quite free from crystals of alkali (a pure sodium-oleate soap would answer as well). Mr. Porter next directed the attention of the meeting to Lin. Saponis, and here spoke of the great difference in soaps and the variable liniments sold. He gave as his opinion that the soap manufactured by Messrs. Gibbs, City Soap Works, was the best. He had tried the soap suggested by Mr. Wood, but the results were not at all satisfactory. Mr. Porter concluded by a few remarks upon Lin. Sinapis Co., Lin. Terebinth, and Lin. Terebinth Acet.

The CHAIRMAN said he thought the Paris form for iodide of potassium liniment the best, and that what was really a private form ought not to have been introduced into the Pharmacopœia.

Mr. BROWNEN did not see the use of camphor in Lin. Aconiti and Lin. Belladon.; it could be smelt in the one, but not in the other. He also mentioned that the oil of lavender in Lin. Camph. Co. could scarcely be distinguished, and thought Ol. Cajuputi would be more suitable and in character. Lin. Crotonis was not strong enough: ought not the proportion of Ol. Crotonis to be increased? Lin. Iodi, although it altered in composition, yet the iodine remained in some combination: were its therapeutic effects the same? With Mr. Porter, he agreed that to get creamy Lin. Pot. Iod. c. Sapone, curd soap must be used, and remarked that squeezing through muslin, after it is made, much improved its glossy appearance. Mr. Brownen asked what was to be done with the remains of soap in making Lin. Sapon. Might not Sapo Mollis be used? How much free alkali would exist in such a liniment? How much above an objectionable quantity? He did not think that in Lin. Sinapis Co. an etherial extract of mezereon possessed any advantage over an alcoholic extract. With regard to Lin. Tereb. Acet., why was not some emulsifying agent ordered to keep it from separating, as was the case in St. John Long's liniments, which it was probably intended to represent?

Mr. BEYNON said, in percolating with a glass percolator, after the addition of a small quantity of spirit, water could most certainly be used for displacing Lin. Aconiti and Lin. Belladonnæ. A line of demarcation was apparent where the water touched the spirit, and passed evenly down. In operating on large quantities, and in stoneware percolators, etc., care, of course, would be required. He certainly advocated displacement by a liquid of greater specific gravity to the solvent employed, as, for instance, a solution of salt. The precipitate occurring in Lin. Opii, Professor Attfield has shown, was principally meconate of lime.

Messrs. Jewell, Willmott, and others, took part in the discussion.

CHEMICAL SOCIETY.

APRIL 7th. Professor Williamson, F.R.S., President, in the chair. Messrs. F. Andrews, jun., W. Martindale, and A. H. Palmer were elected Fellows. The following papers were read:—"On the Combinations of Carbonic Acid with Ammonia and Water," by Dr. Divers; "On the Refraction Equivalents of the Aromatic Hydrocarbons and their Derivatives," by Dr. Gladstone; "On the Analysis of Deep-Sea Water," by Mr. Hunter; "Note on Bromopicrin," by Messrs. Bolas and Groves; "On an Acid Feed-water from the Coal-field at Stellarton, Nova Scotia," by Professor How. These papers do not well admit of abbreviation. Messrs. Bolas and Groves announced the discovery of Tetrabromide of Carbon.

April 21st. The President in the chair. Mr. T. Patchett was elected a Fellow. Professor ROSCOE, F.R.S., delivered a lecture

ON VANADIUM.

This metal was discovered in 1830 by Sefström, and fuller investigated by Berzelius, who assigned to it the atomic weight 68·5, and represented its three oxides by the formulæ VO, VO_2, VO_3. Some years afterwards Rammelsberg observed that the mineral vanadinite, a double salt of lead vanadate and lead chloride, is isomorphous with apatite and with mimetesite, the former containing phosphoric, the latter arsenic acid. This crystallographic analogy would have led to the conclusion that the oxide of vanadium in vanadinite has the formula V_2O_5, agreeing with the corresponding oxides of phosphorus and arsenic, P_2O_5 and As_2O_5. But Berzelius representing the oxide in question by the formula VO_3 was compelled to regard vanadinite as an exception to the law of isomorphism. Professor Roscoe having come into possession of a plentiful source of vanadium,* determined to endeavour to clear up this anomaly. He soon found the key to the enigma. He proved that the substance supposed by Berzelius to be vanadium is not the metal, but an oxide; and that the true atomic weight of the metal is 51·3. Thus, the VO_3 of Berzelius really becomes V_2O_5, corresponding to P_2O_5 and As_2O_5. The Lecturer went on to demonstrate that the characters of the vanadates bear out the analogy of vanadic acid with the highest oxides of phosphorus and arsenic; and that vanadium, hitherto standing in no definite relation to other elements, must now be regarded as a member of the well-known Triad class of elementary substances, comprising nitrogen, phosphorus, boron, arsenic, antimony, and bismuth.

The PRESIDENT, in proposing a vote of thanks to the lecturer, called attention to the great service Professor Roscoe had rendered to chemical science by his successful investigation of vanadium. The President's remarks were fully endorsed by Professors Frankland and Odling.

After the delivery of this lecture, Prof. HOFMANN, from

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* This source is a by-product obtained in the preparation of cobalt from the copper-bearing beds of the lower Keuper sandstone of the Trias, at Alderley Edge, in Cheshire.

Berlin, favoured the Society with some observations on a new substance he had obtained when treating Sulpho-urea with silver oxide. The body is distinguished by its great tendency to polymerise. Prof. Hofmann further communicated that a compound isomeric with chloral had recently been discovered by two Berlin chemists. It differs from ordinary chloral by its much higher boiling point.

May 5. The President in the chair. The following gentlemen were elected Fellows:— G. Matthey, T. Steel, T. Allen. Mr. **Brown** read a paper "On Vapour Densities," wherein he gave a historical review of the different methods employed for the determination of such densities. Mr. **Church** communicated the analyses of two Cornish minerals. The one, Restormelite, is a variety of Kaolinite, standing nearest to the Lithomarge group. It contains, however, a greater amount of soda and potash than lithomarge, and has thus in its alkalies preserved more evident traces of its feldspathic origin than usually are found in such alteration products. The other of the mentioned minerals is Chalcophyllite. Mr. Church assigns to this beautiful substance the formula $8CuO,Al_2O_3,As_2O_5+24$ aq. Messrs. **Bolas** and **Gloves** communicated a paper on their newly-discovered Tetrabromide of carbon, CBr_4. This combination can be obtained by various methods; amongst others by heating carbon bisulphide with bromide of iodine in a sealed tube to a temperature of 150° C. for about 48 hours. It is a white, crystalline substance, melting at 91° C., insoluble in water, but readily soluble in hot alcohol, ether, benzol, chloroform, and many other solvents. Sodium amalgam reduces it first to bromoform, then to methylene dibromide.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL ASSOCIATION.

A special meeting of this Association was called for Wednesday evening, March 30, on account of the lecturer, Mr. **George Harrison**, F.L.S., F.C.S., having to go abroad earlier than was anticipated. Mr. Wilson, President, took the chair. The subject of the lecture was

NITROUS OXIDE, OR LAUGHING GAS, AND ITS APPLICATION TO SURGICAL PURPOSES.

The history of the gas was first dwelt upon. It was discovered by Priestley in 1776, and Sir Humphrey Davy, Mr. Wedgwood, and the poet Southey, who called it "the gas of Paradise," were among the first to experience its pleasant effects. The gas was made experimentally, and its chemical properties fully shown. To illustrate its powers of producing anæsthesia, the lecturer inhaled the gas, and in fifty seconds total insensibility to pain was produced. The President also inhaled it, and caused some amusement on telling the audience his pleasant sensations whilst under its influence. The lecturer then stated that for short operations, as the taking off a finger or the extraction of a tooth, it was superior to any anæsthetic known; its advantages over ether or chloroform were, that under its influence the patient suddenly became insensible, and quickly recovered consciousness, the inhalation being unattended by nausea and the dangerous effects incidental to the agents named. To bear out this remark, the lecturer read several certificates from some of the most influential men of the town, kindly lent him by Mr. Harrison, dentist, St. James-street, who, during the last fifteen months, has administered the gas in some hundreds of cases. In conclusion, the lecturer stated that, although the gas was discovered by one of our own countrymen, an American, Mr. Morton (a pupil and then assistant of Horace Wells, who first applied it in dentistry), has petitioned Congress for an appropriation of £40,000 as a reward for his exertions in applying it to surgical purposes.

Some discussion then took place, chiefly on the safety of administering the gas.

Mr. **Harrison**, dentist, stated that he did not think it advisable to administer it to consumptive patients; but it was upon record that it had been administered without the slightest accident to 300,000 patients, many of whom suffered from epilepsy and disease of the heart.

The usual vote of thanks brought the proceedings to a close.

ANNUAL INTERNATIONAL EXHIBITIONS.

Her Majesty's Commissioners for the Exhibition of 1851 have issued an announcement of their intention to hold a series of Annual International Exhibitions of selected works of Fine and Industrial Art and scientific inventions. The first Exhibition of the series will be opened at South Kensington (in a permanent building to be erected for the purpose) on the 1st of May, 1871, and will be closed on the 30th of the following September.

The first Exhibition will include Fine Arts, Manufactures, and Scientific Inventions and new Discoveries of all kinds. Among other general rules, it is announced that the arrangement of the objects will be according to classes, and not, as in former International Exhibitions, according to nationalities.

One-third portion of the space in each class will be assigned to such foreign exhibitors as shall obtain certificates for the admission of their objects from their respective Governments. Foreign countries will appoint their own judges. The remaining two-thirds of the space will be filled with objects produced either in the United Kingdom or abroad, and sent direct to the building for the inspection and approval of judges appointed for the purpose. Her Majesty's Commissioners will provide large glass cases, stands, and fittings, steam and water power, and general shafting, free of cost to the exhibitors; and, except in the case of machinery, will carry out the arrangement of the objects by their own officers. Prices may be attached to objects, and each object must be accompanied by a descriptive label stating the special reasons, such as excellence, novelty, or cheapness, for which it is offered for exhibition. Reports of each class of objects will be prepared immediately after the opening, and will be published before the 1st of June; while foreign countries will be permitted to accredit a reporter for every class in which they exhibit, for the purpose of joining in the reports. No prizes will be awarded, but a certificate of having gained the distinction of admission to the Exhibition will be given to each exhibitor.

A catalogue of the various works displayed will be published in the English language, and will contain not only brief descriptions of the works themselves, but also, in many cases, some notice of the exhibitor—such as his birthplace, his place of residence, the masters under whom he may have studied, and the distinctions that he has gained. Every foreign country will be at liberty to publish a catalogue in its own language, if it should see fit to do so.

The month of February in 1871 will be devoted to the reception of objects for exhibition, and days have been assigned to the various classes. It is announced that no object will be received at any other time than on one of the days set apart for the class to which it belongs.

METRIC WEIGHTS AND MEASURES.

CONFERENCE IN LONDON.

On the evening of the 6th inst. a conference was held at the rooms of the Society of Arts, presided over by Lord Fortescue. The annual report of the International Decimal Association having been read and adopted, Sir Charles Adderley, M.P., moved the following resolution:—"That the great inconvenience to agriculture, manufactures, and commerce, as well as to science, resulting from the numerous complicated and anomalous weights and measures now in use, whether by law or custom, in the British Empire, demands the attention of the Legislature at the earliest practicable time, with a view to the establishment of some convenient uniform decimal system throughout the United Kingdom." He contended that England would be left in the position of contending against the whole world if she adhered to her present system of weights and measures, which, he declared, formed a weighty clog round her neck in her competitions with the world in commerce and manufactures, for we spoke in our "pounds" and "yards" a language which other nations could not comprehend. He dilated at length on the advantage of the Continental system, and cordially moved the resolution. Mr. E. Baines, M.P., seconded the motion, and agreed with the last speaker that our merchants were greatly clogged in their intercourse with other nations by having to master both the native and foreign systems. Professor Airey, the Astronomer-Royal, spoke in favour of the present English weights and measures, and said the Continental system, when superseded by the present system, was very imperfect, whereas ours was perfect in its way, the pound, yard, and foot being current throughout all English counties. He also supported the "stone," and contended that there was the tendency in the human mind to halve or quarter weights and measures. He owned that he made use of the decimal system for scientific purposes. Captain Craigie and Mr. J. Algernon Clarke, from the Central Chamber of Commerce, also spoke in favour of the metrical system, as did Mr. John Bennett, the horologist, and spoke strongly in favour of the system, of which he had had much practical experience in dealing with the Swiss. All the speakers, with the exception of two, were in favour of a change, and the resolution was carried. The following resolutions were also adopted:—"That the Standard Commissioners, having recommended the abolition of troy weights, this conference is of opinion that all those who now use the same should substitute for them, not the pound avoirdupois, but the kilogramme, with its divisions and multiples, by which another practical step will be made towards the complete adoption of the metric system throughout the British Empire, which, in the opinion of this meeting, is an object of the highest importance." "That the introduction of a universal system of weights and measures would not be complete without a corresponding system of international coinage, the same being based on a gold standard of the fineness of 9-10ths, with 1-10th alloy; a decimal division; and identical Mint regulations in all countries." Deputies from the British and Foreign School Society moved the following:—"That in order to facilitate the speedy introduction of metric weights and measures and an international coinage, this conference deems it highly desirable that decimal arithmetic, with the specialities of the metric system, should be taught in all the schools in the United Kingdom." The usual acknowledgments were made and the meeting closed.

UNIVERSAL STANDARD OF MEASUREMENT.

According to the *Mémorial Diplomatique*, the Austrian Government has just signified its assent to a proposal of the French Government for an International Commission to assemble in Paris in order to agree upon a common standard of measurement for all civilized nations. Already 15 European Powers have announced their willingness to take part in the Commission. Even England, which hitherto has been disinclined to depart from old customs, will be represented by the Directors of the Observatories of Greenwich and Oxford. The French Government now only awaits replies from the United States, Brazil, and the South American Republics, previous to calling together the Commission. The Minister for Foreign Affairs would of right be the honorary president, but the proceedings will really be directed by the vice-president, General Morin, Director of the Conservatoire des Arts et Métiers, in whose archives is deposited the official standard of the metre recognised in France.

LAW AND POLICE.

THE RIGHT OF MAKING PILLS.

The case of Perdue *v.* Kingham, came up before Messrs. Thomas Lloyd, Everitt, Avery, the magistrates sitting in petty sessions at Aston, on the 20th ult. Our readers are pretty well acquainted with this case, a report of the first hearing having appeared in our last issue. The plaintiff was George Perdue, chemist, Pershore-street, Birmingham, and the defendant Sophia Kingham, Aston. Mr. Maher, who appeared for the prosecution, said the informations were laid under the "Merchandise Marks Act, 1862," and this charge was, that the defendant had pirated Mr. Perdue's trade mark, which he was entitled to use in connection with the sale of "Dr. Taylor's Dandelion, Chamomile, Castor-oil, Antibilious Pills," and also with having sold 36 boxes of pills, together with the forged or counterfeit trade mark, such trade mark being, in the words of the Act, in, upon, about, or with the case or label covering the article sought to be protected, whereby the defendant had, in regard to the first case, been guilty of a misdemeanour, and in the second rendered herself liable to a penalty not exceeding £5. Mr. Maher explained that the complainant for twenty years past had been the exclusive owner of the recipes for the pills which were sold as Dr. Taylor's pills, and that he had acquired an extensive sale in the market for them, until the defendant pirated his trade mark. Defendant had been one of Perdue's agents, and had purchased the pills from the prosecutor to sell again, but after a time she began to make them herself, and used boxes and labels resembling Perdue's, and thereby injured his trade and connection. The plaintiff had a specific trade mark, and continual sale and usage had given him a sort of property in it which courts of law would protect; and it was clearly established that where the right to the use of a trade mark had been either proved by trial at law, or by long-continued usage, a remedy was granted. Mr. Cheston, who appeared for the defence, wished to know what was the trade mark claimed. Mr. Maher replied that the trade mark was in the words of the Act, and contained in the label. Mr. Everitt (one of the magistrates) wished to know how Mr. Perdue could claim the trade mark of Dr. Taylor? Mr. Maher said a trade mark could be transmitted from one person to another by devise, by succession, or by any other legal mode of acquirement, and illustrated the case of "Croft *v.* Day" in proof of this, for there the executors of the survivor of the the firm of Day and Martin, blacking manufacturers, obtained an injunction against the nephew of the deceased, restraining him from using his own name of Day in conjunction with labels intended to resemble those used by the original firm in the sale of their goods. There was a qualified property in the trade mark used to distinguish a particular class of goods, so as to separate them from all others of the same class in the market, the qualification being the use of the mark or symbol in combination with the article manufactured. In support of his argument he referred to two cases in which it was decided that to pirate a trade mark was equivalent to offering goods for sale representing them to be the manufacture of a rival trader. Here the intention was clear: the labels, with slight variations, were the same, and the colour and shape of the boxes were nearly identical.—Mr. Maher then called Mr. George Perdue, who said he was a chemist and resided in Pershore-street, Birmingham. He obtained a recipe from a Dr. Taylor at Manchester, about twenty years ago. He was the sole manufacturer of the pills known as Dr. Taylor's pills. The defendant, some three years ago acted as agent for him, and he allowed her a profit of 6d. per box on the sale, but she afterwards commenced making an imitation of the pills.—Cross-examined: About three months ago he had another trade mark put upon the outside of his boxes, and he did that as an additional protection. He considered the defendant's were colourable imitations of his label. Miss Francis Morgan, assistant to Mr. Perdue, proved that she had sold defendant's pills three years ago. The sale of the pills being admitted, Mr. Maher proposed to call a witness to prove that the public had been misled by the spurious imitation. Mr. Cheston objected on the ground that no evidence could be given except as to the particular offence on the 11th of March. The Bench ruled that the witness could be examined.—Mrs. Martha Hewlett stated that for several years she was accustomed to purchase Dr. Taylor's pills from Mr. Perdue, and about Christmas last she bought some from Mrs. Kingham, believing that she was selling for or acting as agent for Mr. Perdue, and she (witness) would not have purchased them if she had thought they were her own make. The pills witness bought from defendant did not please witness's customers. Mr. Cheston, for the defence, contended that no distinctive trade mark had been shown to exist. Besides, there appeared to be two trade marks, and there were cases to show that there could only be one. There was also no proof that the pills contained the ingredients set forth. After some deliberation, Mr. Thomas Lloyd said that the magistrates had considered the case, but that there was not sufficient evidence to justify a conviction, and the summons would, therefore, be dismissed. Mr. Maher said his client would, of course, apply to the Court of Chancery for an injunction. Mr. Lloyd said the decision of the Bench would not interfere with or prejudice any course which complainant might be advised to take in regard to proceedings in another court.

CHARGE UNDER THE CONTAGIOUS DISEASES ACT.

At the Bridgnorth Petty Sessions, on the 2nd inst., Mr. Richard Smith, chemist and druggist, of High-street, Bridgnorth, was charged with having six sheep and eight lambs in his possession, they being affected with scab, without having given notice of the same to the inspector of the district, or the chief constable of the borough. Mr. Blackhouse, solicitor, appeared for the defendant, and said that the Contagious Diseases (Animals) Act, of 1869, was not generally made known in the borough, and that his client was totally ignorant of its requirements, even had he been aware that his flock were suffering from the disease complained of. The Mayor said the Bench had no other course to pursue than to fine the defendant in the mitigated penalty of £5, including costs.

"MONING TEA"—THE CUP THAT DOES NOT CHEER.

At the Guildhall, on the 21st of March, Mr. Under-Sheriff Baylis appeared before Mr. Alderman Stone on behalf of the Commissioners of Sewers for the condemnation of six chests of "Moning tea," which had been seized by Dr. Letheby's order as being unfit for the food of man. Mr. Waller attended on behalf of the owners of the tea, and Mr. Besley watched the case on behalf of the wharfingers.

Dr. Letheby said he had made a further analysis of the six samples of tea in question, and found that when he had throughly exhausted them by the repeated action of boiling water the proportion of soluble matter in them amounted to from a little more than 11 per cent. to 13½ per cent. That extracted from common Congou ranged from 22½ to 27½ per cent. Again the woody matter of the tea ranged from 73 per cent. to a little more than 77 per cent. The woody matter of ordinary Congou ranged, according to his experiments, from 59½ to 65 per cent. The proportion of the active principle of the tea amounted to a mere trace—a fraction that was not weighable, whereas in ordinary Congou it would amount to about 2 per cent. Those results confirmed the opinion he had expressed, that it consists of exhausted leaves almost entirely, there being a little good tea mixed with it. He was of opinion that it was unsound and unwholesome, for it was not merely exhausted but decayed. He thought it would be very likely to produce derangement of the stomach.

Dr. John Stenhouse, for several years Professor of Chemistry at St. Thomas's Hospital, said he had given great attention to the chemistry of tea; indeed, he had made it his study since 1842. He had examined the samples of the six chests, and had carefully analysed them. Their colour was a brownish black, and the infusion had a nauseous odour. There was scarcely any odour of good tea in them at all. The result of his examination was that the tea had gone through some process of putrefaction. He first tried it to find how much extract it would yield to boiling water, and after thoroughly exhausting it he found that it yielded about 13¾ per cent. of soluble matter. He found in it $\frac{1}{300}$ of 1 per cent. of theine, instead of 2 per cent. It would require 65 lb, of that tea to yield as much theine as 1 lb. of sound Congou. He thought this tea unwholesome; at any rate, it would not have the beneficial effects that sound tea would have. It was not fit for human food.

Mr. Butcher, a buyer for Travers and Co., and Mr. Siller, a broker, spoke to the quality of the tea, corroborating the previous witnesses, and the latter witness, who had been in China, picked out grains from a sample placed before him which he declared to be Shanghai mud. Other witnesses in the trade having been called to speak to similar facts, the case for the complainant closed.

Mr. Waller then complained that a great deal of prejudice had been created in the public mind by the one side of the investigation only having been published, and the papers commenting upon it. He would call Dr. Redwood, who would prove that there was no deleterious matter in the tea. It was a common tea he did not deny, but it was not putrid or unwholesome.

Dr. Theophilus Redwood said that he was Professor of Chemistry to the Pharmaceutical Society. He had studied tea in its component parts, and had examined samples of the six chests in question. He agreed with the other doctors as to what its component parts were. The quantities were those he should expect to get from a low-class Congou tea. He had failed to find anything present that would be in any way injurious to health when taken as tea was taken. He had failed to find any evidence of putrefactive decomposition in it. He believed it to be as represented, a very low-class tea, which had been already partly exhausted, but which was not and had not been unsound or unwholesome. It was not unfit for food. (By Mr. Baylis.)—He should require strong evidence to make him believe Dr. Stenhouse's assertion that it would require 65 lb. weight of that tea to give as much extractive matter as one pound of ordinary Congou. He thought if he took the tea himself he should take something that would do him no good.

Mr. Alderman Stone said the preponderance of evidence as to the tea being unsound, unwholesome, and unfit for human food was in favour of the complainant, and he should make the order for its destruction, but would restrain its operation until an appeal had been made to the Court of Queen's Bench, and the decision of that Court was known.

On the 25th of April an application for the condemnation of nine half-chests of tea was discussed. According to the evidence of Dr. Letheby, this "tea" was not so bad as that condemned on the 21st ult. A great portion of it was not tea at all, and the remainder consisted of exhausted tea-leaves and a little good tea. Dr. Stenhouse had analysed the tea and did not think it ought to be sold for food. Mr. Alderman Stone, having heard Mr. Poland's explanation of the law, said that it had not been proved the tea was really unfit for food within the meaning of the Act. It was adulterated, and no doubt it was a very bad sort of tea; but the case was very different from the former one, in which it had been proved that the leaves were putrid, and, therefore, would be injurious to the human system. There was no doubt the tea was so adulterated that it ought not to be sold; but under that Act he thought he had no power to condemn it. The application was then dismissed.

CASES OF POISONING.

On the 4th inst., Mrs. Frances Everett, the wife of the rector, of Shaw, Berkshire, accidently poisoned herself by taking a mixture of laudanum and chloroform in mistake for sal volatile. At the inquest, on the 7th inst., it was shown that the deceased lady was of cheerful and lively habits, but had suffered recently from toothache. On discovering her fatal mistake she went to the servants' apartment and told them what she had done, and medical aid was summoned, but without avail. The deceased lady was 57 years of age.

On the 25th ult., a young woman named Phœbe Fish, committed suicide by taking some of Battle's Vermin Killer. Deceased's maiden name was Evans, and having married a man named Fish, lived comfortably with him for seven months, at Newtown; but discovering that the man had previously been married, preferred a charge of bigamy against him, but did not appear to prosecute. The following day she purchased some of this vermin killer at the shop of Mr. Williams, chemist, which she took, and died shortly afterwards.

On the 21st ult., an inquest was held at Poulton-le-Fylde, near Liverpool, on the body of a female named Grace Gabbott, a person aged 51 years, and who was a domestic servant. It appeared that deceased had notice to leave her situation, and that she intended going home to Manchester on the 18th ult. About an hour or so before her time for starting, she purchased four ounces of chloroform, at two different times, from Mr. Sharples, druggist, of Blackpool. She said that she wanted it for neuralgia. On returning from Blackpool, she fell back upon the shoulder of a man riding in the same carriage. She was taken out of the carriage at Poulton, and medical aid was sent for. Dr. Bowness arrived, and administered what he considered would be remedies, and remained in attendance on the deceased all the night. Once on the Tuesday she regained consciousness, but was unable to speak; and in the course of the day she died, apparently from exhaustion. The verdict returned was, that deceased had died from an overdose of chloroform taken inadvertently.

GOSSIP.

Dr. Donkin, of Durham University, is preparing a history of the British Diatomaceæ.

The *Indian Medical Journal* publishes an experiment to show that the monkey is proof against strychnine.

The *Athenæum* states that Mr. Crookes, the editor of the *Chemical News*, is engaged in an investigation on Spiritualism.

We learn from the same journal that Dr. R. Angus Smith is preparing for publication a new treatise on impurities in the atmosphere and how to detect and remove them.

The house of Rothschild have farmed the whole of the produce of the Almaden Quicksilver Mines for a long period.

An Austrian Government expedition to China and Japan has brought back a large number of Chinese and Japanese books, a quantity of fresh-water fish, and a collection of Chinese drugs, of which it is intended to test the efficacy.

It is estimated, says the *New York Medical Record*, that sixty millions of dollars are yearly spent in New York city for intoxicating drinks. This is about 75 dollars for each man, woman, and child, or 375 dollars for each male adult.

The *conversazione* of the Society of Arts, held at the South Kensington Museum on the 4th inst., was honoured with the presence of their Royal Highnesses the Prince and Princess of Wales.

Nature says that the herbarium of the late Von Martius, which was offered to and refused by the Bavarian Government, has been purchased for 30,000 fr. by the Belgian Government to form the basis of a national collection, to be located at Brussels.

A permanent Commission is about to be appointed in France to superintend the French Departments in all future International Exhibitions. At the head of this will be M. Ozenne, permanent secretary of the Minister of Commerce. This Commission will, therefore, have charge of French interests in the annual International Exhibitions.

A sum of money subscribed in Germany for presentation to Baron Liebig has, by his request, been devoted to the foundation of a prize, to be called the Liebig Medal, and to be given from time to time for scientific investigations in subjects connected with agriculture. We regret to hear that the great chemist is very ill.

Mr. A. Liverside, of the Royal School of Mines, and Mr. H. N. Martin, of University College, London, have been elected to scholarships for Natural Science at Christ's College, Cambridge. Mr. H. H. Cunningham, late of the Charterhouse School, has been elected to a scholarship for Natural Science at Clare College, Cambridge.

The annual meeting of the members of the Royal Institution, was held on the 2nd inst. It appeared from the report that 47 new members were elected in 1869, and 63 lectures and 19 evening discourses delivered. The following gentlemen were elected as officers for the ensuing year:—President, Sir Henry Holland, M.D., D.C.L., F.R.S.; treasurer, Mr. William Spottiswoode, M.A., F.R.S.; secretary, Mr. Henry Bence Jones, M.A., M.D., F.R.S.

At a meeting of the Royal Society on the 5th inst., the Council recommended for election the following candidates for Fellowship:—William Froude, C.E.; E. H. Greenhow, M.D.; J. Jago, M.D.; N. Story-Maskelyne, M.A.; M. Tylden-Masters, M.D.; Professor A. Newton, M.A.; Andrew Noble; Captain Sherard Osborn, R.N.; Rev. S Parkinson, B.D.; Captain R. M. Parson, R.E.; W H. Ransom, M.D.; Robert H. Scott; G. F. Verdon, C.B.; A. Voelcker, Ph.D.; S. Wilks, M.D. The election is fixed for June 2.

GAZETTE.

BANKRUPTS.

Fawthorp, Joah, trading as J. Fawthorp and Co., Halifax, wholesale druggist.

Jackson, William Tareton, 213, Union-street, Southwark, druggist and drysalter.

Jackson, William Henry, Coleford, late Woodlands, chemical manufacturer.

Molyneux, Henry, Market-street, Hyde, druggist and sub-postmaster.

Taylor, Coll. Newcastle-upon-Tyne, and Hendon, Ryhope, and Ballion, near Sunderland, Durham, merchant, chemical and colour manufacturer, and commission merchant.

PARTNERSHIPS DISSOLVED.

Briggs and Wheatley, Leeds, drysalters; April 29. Debts by John Edward Briggs, who continues the business.

Cameron and Robinson, Rock Savage Bone Works, Sutton, near Runcorn, Chester, artificial manure and chemical manufacturers; March 21. Debts by Robert Cameron, who continues the business.

Cottle, Welshman, and Co., 6, Duke-street, Manchester-square, Middlesex, wine and spirit merchants and importers of mineral waters; April 26. Business continued by William Welshman.

Decastro, Watson, and Richards, 32, St. George's-place, Hyde-park-corner, Middlesex, chemists and druggists; December 31, 1869.

Lawrence and Farwell, Launceston, Cornwall, physicians, surgeons, etc.; March 25.

Marshall and Wragg, Church-lane, Whitechapel, Middlesex, veterinary surgeons; April 1. Debts by Francis Whitfield Wragg, who continues the business.

Mouritz and Buchan, Runcorn, Chester, surgeons; April 6. Debts by Robert Hanham Mouritz.

Rees, Josiah and Co., Ponteproth Chemical Works, Morriston, near Swansea, Glamorgan, chemical manufacturers. April 13.

Rye and Dewar, Banbury, Oxford, surgeons, etc.; April 20. Debts by James Dewar, who continues the business.

Smith and Campbell, Navenby, Lincoln, surgeons, etc., April 6. Business continued by Andrew Campbell.

Spencer, John, sen., and John Spencer, jun., trading as John Spencer, manufacturers of optical, chemical, and photographic apparatus, Glasgow; December 31, 1869, by retirement of John Spencer, sen.

Waters and Williams, 34, Eastcheap, London, British wine and vinegar merchants; March 31. Debts by Robert Waters, who continues the business.

ANNOUNCEMENTS OF FIRST GENERAL MEETINGS FOR ARRANGEMENTS OF COMPOSITIONS.

Crossley, Frederick Benjamin, and Smith Crossley, trading as F. B. Crossley and Co., Rastrick, near Huddersfield, manufacturing chemists.

Gramshaw, Henry, Halstead, surgeon and apothecary.

P gos, James, Orissa, Golden Ball-street, Norwich, chemist and druggist.

Roberts, John George, Blackwood, Monmouth, chemist, druggist, and grocer.

Trade Memoranda.

Several letters lie before us from chemists in various towns in the Midland Counties respecting "Newman and Co.'s newly-invented Vermin Eradicator, a certain remedy for totally destroying all kinds of Insects and Vermin without the use of deadly poisons." Some of our correspondents have tried experiments with mice, keeping them in glass-topped boxes, and feeding them with the eradicators, and have thus amply confirmed the proprietors' assertion that the preparation contains no deadly poison. The mice not only were not killed—or we should say "eradicated"—but, in one case at least, they thrived on the condiment. One of our correspondents asks us to announce that he, Mr. E. P. Peele, of Long Sutton, is willing to supply a half gross of sixpenny packets for one shilling. We cannot in the least understand why a man who appears to be gifted with extraordinary persuasive powers, as appears to be the case with the representative of Messrs. Newman, should so waste his time and talent on the sale of worthless rubbish, when he might just as easily be selling something of real value. The firm is established at Globe-street, Belgrave-road, Birmingham; but from what we can learn, letters of complaint sent to that address are not attended to.

Messrs. Gabriel have brought under our notice a showy little counter case, which they now supply to chemists who will take one each of their preparations for the teeth, in order to introduce these to the public.

Messrs. Lyman, Elliott, and Co., wholesale druggists, of Toronto, Canada, have dissolved partnership, and the business will in future be conducted by Messrs. William and Robert Elliott, under the style of Elliott and Co.

The Crystal Palace Marking Ink, manufactured by the Daughter of the late John Bond, may now be had in dozens, mounted on a card.

The report of the Liebig's Extract of Meat Company (Limited) for 1869, shows a profit of £42,360 15s. 6d., out of which the directors propose to distribute £1 per share, to write off £14,000 for depreciation on machinery and buildings, and to carry £7,000 to reserve, leaving a balance of £2,988 8s. 10d.

Messrs. Macniven and Cameron, of Edinburgh, whose "Owl" and "Waverley" pens won general approval last year, have now introduced another kind, which they call the "Nile" pens. We should have been glad to have agreed with our satisfied contemporaries if we could have done so, but we are bound to say that the "Nile" pens are not to our liking. Indeed, we should say, they are *nihil* of pens.

Among the answers to correspondents in the *Lancet* of April 30, we find the following:—" M.D.—We agree with our correspondent that the charges of druggists are excessive, whether to surgeons or to the general public." The coupling of the two injured classes is exquisite. Unless our contemporary and poor M.D. had added "the general public," it might have seemed as if there had been some interested motive in this protest against the tyranny of druggists. As it is, however, our readers will appreciate the chivalric generosity of this dignified sentence. It is somewhat as if the giant in Goldsmith's story had abused the dwarf for using violence in their continued robberies.

On Saturday, the 9th ult., upwards of forty of the *employés* of Messrs. Raimes, Blanshards and Co., Edinburgh, met at supper in the Baltic Hotel, Leith, and presented their manager, Mr. Davies, with a very handsome timepiece and tea service, as a mark of their esteem.

Retail chemists perhaps hardly consider how much they can do for the advancement of chemical especially, and scientific education generally, throughout the country. Few of them ever think of fitting themselves out with an assortment of chemical apparatus until a demand has arisen which it is more trouble to resist than to supply. It is a very safe and careful system, doubtless, to lay in no stock which one is not certain of selling, but it is more creditable and clever to be constantly extending one's boundaries by the creation of new wants. And there are numbers of persons, particularly among our better class youth, to whom the constant sight of retorts, crucibles, and such like articles, soon become irresistible. The ball once set rolling, it never stops, and if the chemist does nothing else by exhibiting this class of goods, he will at least show his customers that he knows something about other apparatus than scales and weights. Artemus Ward thought a "goak" once in a way was not out of place in a comic publication. Equally appropriate are laboratory requirements in a chemist's store. To any who think of cultivating this class of trade we have much pleasure in recommending an examination of the catalogue of Messrs. Mottershead & Co. (Manchester). We consider their terms are very advantageous.

Correspondence.

EARLY CLOSING.

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

SIR,—There being at present a general desire among the assistants in the wholesale drug houses, that the hours of business should be curtailed, will you allow me to point out to them how the matter may be forwarded.

Let each be at his post punctually in the morning, realising that unless he be up to his work at the start, it will be before him at the finish. Let him remember also that he is paid for a full day's labour, not for a day minus a few minutes. Those who are late to business, and excuse themselves on the ground of its being "only a few minutes," would be somewhat surprised were they to receive short pay for a full day's labour, and would scarcely be satisfied with the excuse of its being "only a few pence."

Then, again, everyone should determine that whatever the case with others, he would have his work done, and not only done, but done in accordance with the arrangements of the warehouseman. Many work quickly who do not work wisely, as they would discover were they, as warehousemen, to find on the packing counter the wets of half a dozen orders without drys, and as many drys without wets, and this, too, despite other arrangements.

And for employers, I do not think they require much urging in the matter. Many of them have already adopted the system, and few, if any, would refuse to close at six provided the work were done. The giving up half an hour at dinner time would forward the work so much that the warehouseman would be much better able to be ready for the railway vans; and the result or results would be, that whilst in summer the assistant would have a longer evening, in winter the employer would have a shorter gas bill.

Trusting that the employers will enhance the value of the boon by giving it generously,

I am, yours, etc.,

ALPHA.

CHEMISTS AND DRUGGISTS IN IRELAND.

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

SIR,—As the trade in Dublin has a vague expectation of the extension of the English Pharmacy Act in Ireland, I think that a short paragraph in your journal, giving any information you possess on the point, would be most acceptable. Do you think the Act will be extended to Ireland? Our condition here is somewhat different from that of the English and Scotch druggists, inasmuch as the apothecaries compounding prescriptions. We deal largely in sheep and cattle medicines, reorganising large quantities of such poisons, as arsenic and corrosive sublimates, and should the Act be extended to Ireland, a druggist who could not pass the examination might as well shut up his shop altogether. Any information as to the intentions of our law-makers will, I am sure, be most gratefully received by the entire trade here.

I am, Yours, etc.,

Dublin, April 26. CHEMIST AND DRUGGIST.

[There is no Bill for extending the Act to Ireland before Parliament at present. Should such a measure be introduced, of course existing interests would be respected.—ED.]

THE CHEMISTS OF OXFORD AND THE PHARMACEUTICAL COUNCIL.

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

SIR,—A memorial to the following effect is being signed here, for presentation to the Council of the Pharmaceutical Society:—

"TO THE HONOURABLE COUNCIL OF THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

"We, the undersigned Pharmaceutical Chemists, members of the Pharmaceutical Society, Associates thereof, and Chemists and Druggists in the City of Oxford, would urgently represent that, whereas your Council did, on the 1st of December last, without having given previous notice either to the Society or to the trade generally, make certain additions to the Schedule of Poisons (appended to the Pharmacy Act, 1868) which upon the approval of Her Majesty's Privy Council became law—that in future it is highly desirable that no such further additions nor resolutions involving legal enactments be made or passed by you, without prior advertisement of the same in the *Pharmaceutical Journal.*

"With regard to the proposed regulations for the keeping and dispensing of poisons, we strongly deprecate their compulsory character, considering it hardly incumbent on us, to bind burdens grievous and mischievous to be borne upon our own shoulders—grievous to ourselves, as ultimately tending to systematise shop inspection—mischievous to the public—affording false security, as 'poisons' would still be sent out from private surgeries without the approved 'safeguards.'"

I would earnestly call the attention of those members of the Society who may be present at the annual meeting, to the fact referred to in the former part of this memorial. The late addition to the Schedule was not only moved, but passed at the ordinary meeting held on the 1st of December last; it was sent to the Privy Council for approval on the 6th, and legalized by announcement in the *London Gazette* on the 21st of the same month.

It was not until the Journal came out on Jan. 1st, that the Society was informed that the addition was even contemplated. This act, though legal, was hardly fair. Why should the Pharmaceutical Council exercise a power not even granted to the Legislature itself—that of making in effect new laws without the cognizance of its own constituency.

Yours truly,
Oxford, May 9. J. T.

THE MODIFIED EXAMINATION.

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

Dear Sir,—Would I be allowed the privilege of a corner in your valuable paper that I might utter a remonstrance against what I, as well as many others, consider a plain piece of injustice on the part of those who take it upon them to see that the Pharmacy Act is properly enforced.

I refer to the extreme hardship provincial assistants are put to under the regulations of the Act, who are required to pass the modified examinations of the Pharmaceutical Society. In the first place, I protest against the right of any body of men to pass a law which attacks existing interests. A law, to be placed upon pure and perfect principles, must contain clauses for the protection of existing interests and enforcing no undue persecution. It may be said, And is not the Pharmacy Act a real example of such a law? Does it not protect the interests of the man in business, whose shop was taken the day previous to the passing of the Act? Was there not an amendment passed, whereby the medical man could prescribe, and still continue to dispense his medicines as heretofore? True, all this was contained in it; but what of the interests of the young man who had served ten or twelve or even more years at the business, and was still one of the working bees, and had not seen his way clear to rent a small room in some back street, stock it with two or three dozen old bottles and an old case of drawers, with a few powders, pills, and plasters, and get himself registered a day or two before the 31st day of July, 1868. Rather than lead such a life, he prefers a situation as an assistant in some more stirring locality where there is better scope for his talent and energy, when all at once in step the promoters of the Pharmacy Act, and bar his progress.

Had he taken the small shop already referred to, and had got himself registered prior to the 31st of July, 1868, he would have been saved all further bother; but since he is only an assistant—albeit with an experience twice as great as his more fortunate brother who had secured a shop—he must needs, even before being allowed to fill an assistant's situation, pass an examination instituted by a board of examiners, not one of whom has had any experience in a provincial trade, it may be, but who are firm believers in centralisation, and look at everything from a metropolitan point of view.

Again, from a pecuniary point of view he is the sufferer. Not only is he compelled to pass an examination, but he is compelled to pay a guinea to get himself examined, and failing his being able to satisfy the board of examiners, he has to pay the fee over again as often as he requires to present himself. The ten or twelve years that he has been in the trade, during which time he has done his work to the satisfaction of his master and the public, who surely are competent judges, are counted for little, and he has to submit to the authority of a body of men who certainly do not know the duties of an assistant in a provincial trade. Can they expect the same expertness in one who has the one moment to mix a pound of paint, the next to compound an opium mixture, and then to weigh a few pounds of Stockholm tar or a stone of whiting? I think not; so my claim is for a little more consideration on the part of the custodians of the new Act towards those whose difficulties I have indicated. If this is not done, a number of young men who do not lack abilities in their profession, will throw it up in disgust and try their fortune elsewhere.

Apologising for taking up so much of your space,
I remain, dear sir, yours respectfully,
A Sufferer.

[We confess we are rather tired of hearing of the hardships of assistants who object to examination.—Ed.]

WHAT IS THE SPECIFIC GRAVITY OF TINCTURA FERRI PERCHLORIDI?

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

Sir,—I was led in the course of an inquiry I was pursuing to determine the specific gravity of Tinctura Ferri Perchloridi, and found it to be ·9770, instead of ·902, as given in the Pharmacopœia, and repeated by Mr. Squire with an amendment. As the number in the Pharmacopœia is so very far from what is correct, and as it may involve some honest man in trouble, and allow a less scrupulous one an advantage, I think you will agree with me, that it ought to be recorded.

Bradford. F. M. Rimmington.

[The following list has been compiled expressly for the Chemist and Druggist, by L. de Fontainemoreau, Patent Agent, 4, South-street, Finsbury, London; 10, Rue de la Fidélité, Paris; and 3, Rue des Minimes, Brussels.]

Provisional Protection for six months has been granted for the following:—

717. G. Wallace, of Belfast, Ireland. Improvements in apparatus for distilling. Dated 10th March, 1870.
787. D. Spill, of Hackney. Improvements in the production of compounds containing xyloidine. Dated 16th March, 1870.
793. F. A. Barrow, of Glasgow. Improvements in apparatus for evaporating, concentrating, and distilling liquids, and in recovering reagents from oil refiners' and other lye-products. Dated 17th March, 1870.
794. G. Walker, of Glasgow. Improvements in bottles for containing aërated and similar liquids under pressure. Dated 17th March, 1870.
795. E. R. Southby, of Shotts, Lanark. Improvements in distilling crude mineral oils and in apparatus therefor. Dated 17th March, 1870.
860. S. Mawson, of Bradford, York. Improvements in apparatus employed in the administration of nitrous oxide gas (or other gas that may be inhaled) for indicating the quantity at each and every inhalation. Dated 24th March, 1870.
872. W. R. Lake, of London. Improvements in the preparation of ammoniated sulphuric acid for the manufacture of manure. Dated 24th March, 1870.
881. G. Townsend, of Glasgow. Improvements in obtaining and applying iron and manganese pro oxides or their carbonates, in obtaining and applying baryta, strontia and salts thereof, in obtaining potash, soda, and sulphur, and in utilising lye or "waste" products arising in the manufacture of chlorine, copper, and alum. Dated 25th March, 1870.
943. G. H. Johnson, of London. Improvements in the preparation of soluble phosphates of lime. Dated 31st March, 1870.
944. R. Scott and W. McIvor, both of Addiewell, Midlothian. Improvements in the treatment of mineral oils. Dated 31st March, 1870.
948. A. V. Newton, of London. Improvements in preparing Iceland and Irish moss for use as a food. Dated 31st March, 1870.
958. G. L. de Negroni, of Paris. Improvements in stoppering bottles, jars, pots, and analogous recipients. Dated 1st April, 1870.
986. A. T. Anguetil, of Paris. An improved treatment and application of oleic and stearic acids for protecting metallic surfaces from oxidation and preserving wood and other materials. Dated 4th April, 1870.
1006. I. Baggs, of High Holborn. Improvements in making the carbonates of ammonia. Dated 6th April, 1870.
1010. J. Mayer, of Great Portland-street. Improvements in specula for surgical purposes. Dated 6th April, 1870.
1020. C. Crossley and R. Whipp, both of Manchester, and T. Crossley, of Rochdale, Lancaster. Improvements in the manufacture of size. Dated 7th April, 1870.

Letters Patent have been issued for the following:—

2981. R. J. Ellis, of Liverpool. Improvements in apparatus for desiccating animal and vegetable matters. Dated 13th October, 1869.
2991. C. L. Page, of Westminster. Improvements in packing cases or boxes for containing bottles or other articles. Dated 14th October, 1869.
3064. H. Brooks, of Regent's-park. An improved metallic cap or cover to glass or other bottles or vessels. Dated 21st October, 1869.
3065. J. Becker, of Paris. An improved apparatus for stopping bottles. Dated 21st October, 1869.
3084. R. Scott and W. McIvor, both of Addiewell, Mid-Lothian. A process whereby the sulphuric acid residues produced in the refining of oleaginous and bituminous matters may be utilised and employed for the production of sulphate of soda, and sulphide of sodium and black ash. Dated 23rd October, 1869.
3102. D. Spill, of Hackney. Improvements in the preparation and use of solvents of xyloidine, so as to render the same more suitable for industrial applications. Dated 26th October, 1869.

153. J. H. Johnson, of London. Improvements in the treatment of acid tars obtained from boghead, mineral schist, or petroleum. Dated 18th January, 1870.

196. J. Paton, of Paisley, Renfrew, and P. and R. Harris, of Glasgow. An apparatus for generating carbonic acid gas for application to the extinction and prevention of fire. Dated 22nd January, 1870.

202. H. M. Whitehead, of Lime-street-square. Improvements in preparing blocks of animal and vegetable materials for making soup or other liquid food Dated 22nd January, 1870.

260. J. Dewar, of Kirkcaldy, Fife. Improvements in the treatment of certain substances for food and for manure. Dated 28th January, 1870.

364. G. W. Wigner, of St. Swithin's-lane. Improvements in the mode of and apparatus for treating and purifying sewage. Dated 8th February, 1870.

Specifications published during the month, Postage 1d. each extra :—

2430. L. D. Newell. Preventing oscillation and sea-sickness. 4d.
2437. G. Ash. Denture for artificial teeth. 4d.
2443. J. G Dale and E. Milner. Pigments. 4d.
2482. F. Praby. Manufacture of caustic ammonia, etc. 1s. 6d.
2493. A V. Newton. Paint. 6d.
2547. W. R. Lake. Rendering and refining lard, etc. 10d.
2588. R Scott and W. McIvor. Treating hydrocarbon oils. 4d.
2589. A. M. Davis. Aerated alcoholic drinks. 4d.
2610. J. Hargreaves. Extracting phosphoric acid and phosphorus from tip cinder, etc. 4d.
2616. C. F. Claus. Manufacture of carbonate of soda, etc. 6d.
2624. W. E. Gedge. Rectifying alcohols. 10d.
2654. A. H. Gilmore. Shielding wounds, etc. 4d.

TRADE REPORT.

CONFIDENCE is undoubtedly returning in the commercial world, and a revival of business has occurred in almost all departments. Doubtless we shall float on again in an apathy of activity, to use a paradoxical expression, until we reach again the indications of the rapids of another of our periodical panics, and then everybody will wonder how it could be that past experience should have taught business men so little. But the fact is, that speculation is so inherent in our nature, and the race for riches is in this civilised age so urged on that moralising is lost, and lessons of experience are wasted. But the returns issued by the Board of Trade do not represent speculative business, and it is most satisfactory to observe the marks of steady and healthy progress evident from these. We notice that the total value of our exportations for the first quarter of the present year has been £45,678,774, or about 6½ per cent. above those of the same quarter of last year, and more than 10 per cent. above those of the same quarter of 1868, while the proportionate increase has been much greater if month is compared with month. These figures ought to put spirit into us all and form at least good ground for congratulation. The following table presents an interesting statement of the progress of English commerec during the present century :—

	Imports.	Exports (British).	Exports (Total).
In 1802	£30,000,000	£40,000,000	£50,000,000
In 1820	32,438,650	36,425,625	46,950,564
In 1830	46,245,241	38,271,597	46 822,034
In 1840	67,432,964	51,406,430	65,180,736
In 1850	100,469,067	71.367,885	93,242,097
In 1860	210.530,873	135,891.227	164,521 351
In 1866	295,290.274	188,917,536	238,905,682
In 1868	295,511,566	179,463,644	227,588,663

The differcnee between British and the total exports is made up of re-shipments of imports. The year 1868 was one of unusual depression, and therefore does not compare well with 1866, the most active year on record. The year 1802 was one of peace between two long wars.

Throughout the month the business transacted in the drug market has been steady, but quiet, sales being generally made for consumption only with but little speculative demand. The reports from the chemical manufacturers are almost buoyant, and indicate a continued and increasing demand from abroad. Prices, however, continue as before with but very slight variation.

There are in a few instances some notably large stocks of certain drugs in the docks and public warehouses. For instance, of cloves we have now 12,342 packages against 6,161 this time last year. Of camphor there are now 5,772 gackages against 2,403. Calumba Root and Cubebs are also in large supply, and are somewhat depressed in the market.

ALOES: Cape are rather easier. East India, fine dry are wanted, other kinds are neglected; 11 casks liquid Soccotrine sold without reserve at 40s to 45s.—AMBERGRIS: 9 tins, ordinary to fine grey were bought in at 15s. to 32s. 6d., some dark only selling at 20s. per oz.—BEES' WAX: no East India offered.—CARDAMOMS sell well, particularly the short plump sort; mixed at 8s.—DRAGON'S BLOOD sells readily, and fine wanted; 27 casks offered, 11 sold, middling lump £6 to £6 5s., inferior bricky colour 81s. per cwt. Stock 193 chests against 205 chests —MUSK is firm and fine, Tonquin is worth 33s. to 35s., per oz.—NUX VOMICA is wanted. Tinnevelly SENNA sells well, particularly good leaf. Stock of all kinds, 813 bales against 1,797 last year.—RHUBARB: good is in demand; but there is no demand for low quality.—GUMS—ASSAFŒTIDA has arrived freely, and will shortly be offered. At present prices are firm.—ARABIC has been arriving freely, and out of 323 packages of East India offered, very little sold; last week a little good pale sorts brought 82s. to 83s., pale and reddish sorts chiefly small 72s. 6d., bold siftings 63s., small ditto 37s., red pickings 45s. per cwt. Stock 3,333 chests against 2,863 chests.—AUSTRALIAN ARABIC: the only quantity offered of late has been 31 packages, of which only a part sold.—COPAL: large arrivals have taken place, but mostly sold, except some boxes of Singapore.—DAMAR is wanted, particularly fine Batavia.—GAMBOGE has arrived freely, still the bulk of 98 cases offered found ready buyers, and at the last sales good bright pipe, little run, sold at £16 10s. to £16 15s., good middling £15 10s., ordinary and middling £13 5s. to £14 per cwt.—MYRRH: fine sells readily, and is wanted. 10 serons good, bright, rather small, sold at £13, and rather darker £10 10s.; 9 cases part sold, ordinary dusty chips at 25s., very small dust 11s. per cwt. Stock 110 packages against 94 packages.—SHELLAC is selling in moderate quantites only at barely late quotations, and a great deal of that offered bought in; the auctions have contained 877 chests, of which very little sold under the hammer.

DRYSALTERIES.

CUTCH has been quiet.—GAMBIER is lower, and no buyers now over 16s. 6d. per cwt.—GALLS: China are lower.—LAC DYE is steady, but not much business doing.—MYRABOLANES are in good demand.—SAFFLOWER: very little has been offered, and our market is looking better, and several parcels have been placed privately at some advance.—No MADDER ROOTS or MUNJEET offered.—ORCHELLA WEED is rising in value.—SAPAN WOOD: very dull.—TURMERIC: only 100 bags Bengal offered and withdrawn, but a large business is doing afloat, and 1,250 bags have been sold at 20s. up to 20s. 6d. per cwt.

OILS.

The reports from the Greenland fisheries speak of a somewhat extraordinary success during the past season. Notwithstanding the prices for fish oils are at present firmly maintained, little variation has been apparent in the market for LINSEED since our last, but the tendency has been towards weakness, and prices now are barely equal to those of a month since, being on the spot in London £31 15s. to £32, in Hull £31 10s. to £31 15s. and for July to December deliveries £32 10s. The market for OLIVE OILS has sunk into a state of utter stagnation; prices, though again lower, are still nominal, and transactions have been unimportant. Arrivals of EATING OILS have become more numerous, and, with little inquiry, prices have slightly receded, Florence, per half chest, being now 16s. 6d. to 17s. The inquiry from exporters having subsided, COCOANUT OIL has become of difficult sale, and for the commoner qualities the value has somewhat given way, Ceylon having latterly been sold at £40 to £41, and ordinary Cochin £45 to £45 10s. As a liberal supply of ordinary Australian Tallow is available at cheap rates, PALM OIL continues to be taken sparingly at £40 to £40 5s., which is again a trifle easier. In the earlier part of the month SPERM OIL was in more general request, and improved rates were obtained, Colonial bringing £91 to £92, and American £90 to £91; which rates have since been well maintained, though with little activity towards the close.

The INDIGO sales just over have been characterised by firmness and slightly advanced prices. There seems to be an anticipation of another small crop, and prices will probably be still higher yet.

Monthly Price Current.

[The prices quoted in tho following list are those actually obtained in Mincing lane for articles sold in bulk. Our Retail Subscribers must not expect to purchase at these market prices, but thoy may draw from them useful conclusions respecting the prices at which articles are offered by the Wholesale Firms.]

CHEMICALS.	1870. January.					1869. January.				
ACIDS—	s.	d.		s.	d.	s.	d.		s.	d.
Acetic ....per lb.	0	4	to	0	0	0	4	to	0	0
Citric ....per lb.	2	5½	..	2	6	2	7	..	2	7½
Hydrochlor. ....per cwt	4	0	..	7	0	4	0	..	7	0
Nitric ....per lb.	0	5	..	0	5½	0	5	..	0	5½
Oxalic .... ,,	0	8	..	0	0	0	8	..	0	0
Sulphuric ...... ,,	0	0¾	..	0	1	0	0¾	..	0	1
Tartaric crystal .. ,,	1	2¼	..	0	0	1	3	..	0	0
powdered ,,	1	3	..	0	0	1	3¼	..	0	0
Antimony ore......per ton	340	0	..	400	0	280	0	..	300	0
crude ..per cwt	40	0	..	0	0	25	0	..	26	0
regulus.. ,,	30	0	..	0	0	43	0	..	50	0
star .... ,,	90	0	..	0	0	48	0	..	50	0
Arsenic, lump...... ,,	16	0	..	16	6	16	0	..	16	6
powder.... ,,	7	3	..	7	6	7	9	..	8	0
Brimstone, rough ..per ton	160	0	..	0	0	165	0	..	0	0
roll ....per cwt	11	0	..	0	0	12	0	..	0	0
flour.... ,,	12	0	..	13	0	14	0	..	0	0
Iodine, dry ....per oz.	0	9	..	0	9½	0	9¾	..	0	10
Ivory Black, dry..per cwt.	0	0	..	0	0	0	0	..	0	0
Magnesia, calcined..per lb.	1	2	..	0	0	1	6	..	1	3
Mercury...... .. per bottle	137	0	..	133	0	137	6	..	0	0
Minium, red ......per cwt.	20	9	..	21	0	20	9	..	21	0
orange .... ,,	31	6	..	32	6	32	6	..	33	6
Precipitate, red ....per lb.	2	6	..	0	0	2	6	..	0	0
white .. ,,	2	5	..	0	0	2	5	..	0	0
Prussian Blue ...... ,,	0	0	..	0	0	1	0	..	1	10
SALTS—										
Alum ....per ton	145	0	..	150	0	145	0	..	150	0
powder .... ,,	165	0	..	170	0	165	0	..	170	0
Ammonia:										
Carbonate ......per lb.	0	5¾	..	0	6	0	5¾	..	0	6
Hydrochlorate, crude, white........ per ton	430	0	..	560	0	540	0	..	0	0
British (*see* Sal Ammoniac)										
Sulphate ......per ton	320	0	..	325	0	330	0	..	335	0
Argol, Cape ......per cwt	50	0	..	67	6	65	0	..	85	0
France .... ,,	40	0	..	50	0	45	0	..	60	0
Oporto, red ,,	22	0	..	24	0	22	0	..	25	0
Sicily . .. ,,	32	0	..	40	0	45	0	..	50	0
Naples, white ,,	0	0	..	0	0	55	0	..	65	0
Florence, white	0	0	..	0	0	70	0	..	75	0
,, red ,,	0	0	..	0	0	60	0	..	65	0
Bologna, white ,,	0	0	..	0	0	0	0	..	0	0
Ashes (*see* Potash and Soda)										
Bleaching powd . per cwt.	9	6	..	0	0	10	3	..	10	6
Borax, crude .... ,,	25	0	..	40	0	25	0	..	35	0
(Tincal) .. ,,	55	0	..	65	0	30	0	..	52	0
British refnd. ,,	63	0	..	70	0	66	0	..	67	0
Calomel ....per lb.	2	5	..	0	0	2	5	..	0	0
Copper.										
Sulphate ......per cwt.	23	6	..	24	0	24	0	..	24	6
Copperas, green ..per ton	50	0	..	60	0	52	6	..	60	0
CorrosiveSublimate..p.lb.	1	11	..	0	0	1	11	..	0	0
Cr. Tartar, French, p. cwt.	83	0	..	84	0	89	6	..	90	0
Venetian grey ,,	83	0	..	0	0	0	0	..	0	0
brown ,,	0	0	..	0	0	62	6	..	72	6
Epsom Salts ....per cwt.	6	0	..	7	0	8	0	..	3	6
Glauber Salts .... ,,	4	6	..	6	0	5	6	..	6	0
Lime:										
Acetate, white, per cwt.	12	6	..	23	0	12	6	..	22	0
Magnesia: Carbonate ,,	42	6	..	0	0	42	6	..	0	0
Potash:										
Bichromate ....per lb.	0	5¼	..	0	0	0	5	..	0	5½
Carbonate:										
Potashes, Canada, 1st sort ......per cwt.	31	9	..	32	0	32	0	..	0	0
Pearlashes, Canada, 1st sort ......per cwt.	32	9	..	33	0	32	0	..	0	0
Chlorate ....per lb.	0	9¾	..	0	10	1	0	..	0	0
Prussiate . .... per lb.	1	0	..	0	0	0	11	..	1	0
red .... ,,	1	9½	..	1	10	1	9½	..	1	10
Tartrate (*see* Argol and Cream of Tartar)										
Potassium:										
Chloride ......per cwt.	9	6	..	0	0	7	10	..	3	0
Iodide.......... per lb.	11	6	..	12	0	12	0	..	0	0
Quinine:										
Sulphate, British, in bottles ...... per oz.	5	10	..	6	0	5	9	..	0	0
Sulphate, French ,,	5	6	..	0	0	5	2	.	0	0
Sal Acetos ....per lb.	0	10	..	0	0	0	10½	..	0	0
Sal Ammoniac, Brit. cwt.	41	0	..	42	0	30	0	..	38	0
Saltpetre:										
Bengal, 6 per cent. or under ......per cwt.	24	0	..	25	0	20	9	..	22	6
Bengal, over 0 per cent. per cwt.	22	6	..	23	6	20	0	..	20	6
Madras........ ,,	21	6	..	22	0	0	0	..	0	0
Bomb & Kurrachee p.ct.	0	0	..	0	0	0	0	..	0	0
European...... ,,	25	0	..	26	0	22	0	..	22	6
British, refined ,,	27	0	..	27	6	26	0	..	25	6
Soda: Bicarbonate, p.cwt.	10	0	..	0	0	10	9	..	0	0
Carbonate:										
Soda Ash....per deg.	0	1¾	..	0	1⅞	0	1⅝	..	0	2
Soda Crystals per ton	85	0	..	90	0	82	6	..	85	0

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Soda:	s.	d.		s.	d.	s.	d.		s.	d.
Hyposulphite..per cwt.	13	6	to	14	0	18	0	to	0	0
Nitrate........ ,,	16	6	..	17	6	15	6	..	15	9
Sugar of Lead, White, cwt.	39	0	..	40	0	40	0	..	42	0
Brown .... ,,	26	0	..	23	0	29	0	..	30	0
Sulphur (*see* Brimstone										
Verdigris .... per lb.	1	0	..	1	2	0	11		1	1
Vermilion, English..per lb.	2	4	..	2	6	2	6	..	3	0
China.... ,,	3	0	..	3	1	2	8	..	0	0
DRUGS.										
Aloes, Hepatic......per cwt.	60	0	..	160	0	80	0	..	180	0
Socotrine .. ,,	100	0	..	220	0	120	0	..	260	0
Cape, good.. ,,	26	0	..	28	6	28	0	..	33	0
Inferior ,,	17	0	..	26	0	16	0	..	23	0
Barbadoes ,,	80	0	..	220	0	70	0	..	190	0
Ambergris, grey........ oz.	25	0	..	28	0	27	6	..	32	6
BALSAMS—										
Canada ....per lb.	0	10½	..	1	0	1	3	..	0	0
Capivi .... ,,	1	9	..	1	11	2	0	..	0	0
Peru .... ,,	7	8	..	7	10	11	0	..	11	6
Tolu .... ,,	2	6	..	2	8	2	3	..	0	0
BARKS—										
Canella alba ....per cwt.	20	0	..	34	0	30	0	..	45	0
Cascarilla.. .... ,,	22	0	..	34	0	26	0	..	36	0
Peru, crown & grey per lb.	0	10	..	2	4	0	10	..	1	11
Calisaya, flat ,,	3	6	..	3	8	3	0	..	3	6
quill ,,	3	6	..	3	7	2	10	..	3	5
Carthagena ,,	1	0	..	1	9	0	9½	..	1	7
Pitayo .... ,,	0	10	..	1	6	0	9	..	1	5
Red .... ,,	1	6	..	7	0	3	0	..	9	0
Bucho Leaves ...... ,,	0	3	..	0	6	0	4	..	0	7
Camphor, China.. per cwt.	82	6	..	87	6	105	0	..	109	0
Japan ,,	87	6	..	90	0	115	0	..	0	0
Refin Eng. per lb.	1	3½	..	0	0	1	8	..	0	0
Cantharides ...... ,,	4	0	..	0	0	2	2	..	2	3
Chamomile Flowers p. cwt	40	0	..	72	6	60	0	..	100	0
Castoreum .... per lb.	4	0	..	32	0	5	0	..	32	0
Dragon's Blood, lump ,,	90	0	..	200	0	100	0	..	160	0
FRUITS AND SEEDS (*see also* Seeds *and* Spices.										
Anise, China Star pr cwt.	120	0	..	130	0	110	0	..	115	0
German, &c. ,,	28	0	..	40	0	26	0	..	38	0
Beans, Tonquin .. per lb.	1	0	..	1	6	1	0	..	1	6
Cardamoms, Malabar good ,,	8	3	..	9	6	7	6	..	8	0
inferior ,,	6	6	..	8	0	5	6	..	7	0
Madras ,,	5	0	..	8	3	4	6	..	8	0
Ceylon ,,	2	6	..	2	10	2	9	..	3	3
Corozo Nuts.... per cwt.	12	0	..	15	0	16	0	..	19	0
Cassia Fistula.. ,,	16	0	..	35	0	17	0	..	30	0
Castor Seeds .. ,,	10	0	..	12	0	11	0	..	13	0
Cocculus Indicus ,,	19	0	..	20	0	26	0	..	28	0
Colocynth, apple.. per lb.	0	4¾	..	0	8	0	6	..	0	10
Croton Seeds .. per cwt.	46	0	..	55	0	60	0	..	63	0
Cubebs .... ,,	27	6	..	32	6	40	0	..	42	0
Cummin........ ,,	100	0	..	110	0	33	0	..	48	0
Dividivi .... ,,	12	0	..	14	0	10	6	..	12	6
Fenugreek...... ,,	13	0	..	15	0	9	0	..	14	0
Guinea Grains .. ,,	31	6	..	34	0	39	0	..	40	0
Juniper Berries ,,	7	6	..	8	0	7	0	..	3	0
Myrobalans .... ,,	8	0	..	16	6	9	6	..	17	0
Nux Vomica.... ,,	10	0	..	14	0	10	0	..	13	0
Tamarinds, East India ,,	10	0	..	16	0	20	0	..	28	6
West India, new ,,	10	6	..	20	0	16	0	..	28	0
Vanilla, large .... per lb.	24	0	..	32	0	27	0	..	30	0
inferior ,,	12	0	..	22	0	20	0	..	26	0
Wormseed per cwt.	35	6	..	0	0	20	0	..	30	0
Ginger, Preserved, in bond (duty 1d. per lb.) per lb.	0	6	..	0	3	0	6	..	0	10
Gums (*see separate list*)										
Honey, Narbonne ,,	30	0	..	47	0	30	0	..	35	0
Cuba .... ,,	22	0	..	36	0	21	0	..	36	0
Jamaica.. ,,	31	0	..	55	0	25	0	..	45	0
Ipecacuanha .... ,,	6	9	..	7	0	7	6	..	7	10
Isinglass, Brazil . ,,	2	11	..	4	5	3	1	..	3	4
Tongue sort ,,	3	2	..	4	9	3	3	..	5	1
East India ,,	1	10	..	3	11	2	3	..	4	0
West India ,,	4	0	..	4	6	3	8	..	4	0
Russ. long staple	5	0	..	8	0	5	0	..	7	6
,, leaf ,,	3	0	..	5	0	0	0	..	0	0
,, Simovia	1	6	..	2	6	1	6	..	2	6
Jalap, good ...... ,,	2	8	..	3	4	3	2	..	4	1
infer. & stems ,,	0	6	..	2	7	0	6	..	3	0
Lemon Juice ... per degree	0	1	..	0	1⅛	0	1	..	0	1⅛
Liquorice, Spanish per cwt.	60	0	..	65	0	63	0	..	68	0
Italian ,,	48	0	..	63	0	48	0	..	67	0
Manna, flaky .... per lb.	3	0	..	3	6	3	0	..	3	6
small...... ,,	1	6	..	1	9	1	3	..	1	9
Musk.............. per oz.	18	0	..	35	0	19	0	..	35	0
OILS (*see also separate List*)										
Almond, expressed per lb.	1	0	..	0	0	1	3	..	0	0
Castor, 1st pale .... ,,	0	4¾	..	0	0	0	5¼	..	0	6
second .... ,,	0	4½	..	0	0	0	5½	..	0	0
infer. & dark ,,	0	4½	..	0	0	0	4¾	..	0	5
Bombay (in casks)	0	4	..	0	4½	0	4½	..	0	0
Cod Liver ......per gall.	5	0	..	6	3	4	0	..	6	3
Croton............per oz.	0	3½	..	0	4½	0	3	..	0	4
Essential Oils:										
Almond ....per lb.	42	0	..	0	0	40	0	..	0	0
Anise-seed ...... per lb.	8	7	..	0	0	9	6	..	9	9
Bay ....per cwt.	65	0	..	70	0	70	0	..	80	0
Bergamot ......per lb.	8	0	..	15	0	9	0	..	17	0
Cajeput.(In bond) per oz.	0	2½	..	0	3	0	1¾	..	0	2
Caraway ....per lb.	5	6	..	6	3	5	3	..	5	9
Cassia .... ,,	4	7	..	0	0	5	3	..	0	0
Cinnamon ......per oz.	1	0	..		6	1	0	..	4	0

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Essential Oils, *continued*:—	s.	d.	s.	d.	s.	d.	s.	d.
Cinnamon-leaf ..per oz.	0	2	0	6	0	6	0	0
Citronelle ...... ,,	0	2¼	0	2½	0	2¾	0	3½
fine.... ,,	0	3	0	3½	0	3	0	4
Clove............per lb.	2	6	0	0	2	8	0	0
Juniper .... ,,	1	0	2	0	1	9	2	0
Lavender........ ,,	3	0	4	3	2	0	3	9
Lemon.......... ,,	5	0	7	0	4	0	8	0
Lemongrass ....per oz.	0	3¼	0	3½	0	3	0	4
Neroli .... ,,	0	5	0	0	0	0	0	0
Nutmeg .... ,,	0	4	0	8	0	4	0	7½
Orange..........per lb.	5	0	7	0	5	0	8	0
Otto of Roses....per oz.	13	0	20	0	15	0	20	10
Peppermint:								
American ....per lb.	14	0	14	6	19	0	20	6
English ...... ,,	32	0	42	0	38	0	43	0
Rosemary ...... ,,	1	9	2	0	1	9	2	0
Sassafras........ ,,	4	0	4	0	5	6	6	0
Spearmint ...... ,,	4	0	16	0	4	0	18	0
Thyme.......... ,,	1	10	2	0	1	10	4	0
Mace, expressed .. per oz.	0	1	0	2½	0	0¾	0	2½
Opium, Turkey ...... per lb.	35	0	37	0	34	0	40	0
inferior ...... ,,	25	0	35	0	26	0	32	0
Quassia (bitter wood) per ton	140	0	150	0	200	0	205	0
Rhubarb, China, good and fine ....per lb.	4	6	8	0	4	6	7	0
Good, mid. to ord. ,,	0	6	4	3	0	9	3	0
Dutch trimmed ,,	9	6	10	0	0	0	0	0
Russian .... ,,	0	0	0	0	0	0	0	0
ROOTS—Calumba..per cwt.	27	0	35	0	40	0	50	0
China .... ,,	33	0	43	0	27	0	43	0
Galangal .... ,,	23	0	24	0	13	0	18	0
Gentian .... ,,	17	0	20	0	13	0	18	0
Hellebore ...... ,,	22	0	30	0	22	0	30	0
Orris............ ,,	50	0	52	0	38	0	44	0
Pellitory .... ,,	58	0	60	0	58	0	60	0
Pink..............per lb.	0	7	0	10	0	6	0	9
Rhatany.......... ,,	0	5	0	10	0	6	0	10
Sencka........... ,,	2	10	3	0	1	11	2	0
Snake .... ,,	1	0	0	0	1	3	0	0
Saffron, Spanish .. ,,	50	0	56	0	27	0	34	0
Salep ....per cwt.	110	0	0	0	120	0	130	0
Sarsaparilla, Lima per lb.	0	6	0	7	0	7	0	8
Para.............. ,,	1	0	1	3	1	0	1	3
Honduras .... ,,	1	2	1	6	1	0	1	6
Jamaica .... ,,	2	6	4	4	1	4	2	6
Sassafras ....per cwt.	0	0	0	0	14	0	34	0
Scammony, Virgin ..per lb.	28	0	32	0	28	0	35	0
second & ordinary ,,	10	0	23	0	10	0	23	0
Senna, Bombay .... ,,	0	3½	0	6	0	3	0	5½
Tionivelly .... ,,	0	3	1	4	0	1½	0	10
Alexandria........ ,,	0	4	1	6	0	7	1	8
Spermaceti, refined.. ,,	1	6	1	7	1	5	1	6
American .... ,,	1	6	0	0	1	4	0	0
Squill.............. ,,	0	1¼	0	2¼	0	1	0	2¼
GUMS.								
Ammoniaci drop ..per cwt.	200	0	240	0	220	0	200	0
lump .. ,,	120	0	190	0	140	0	240	0
Animi, fine washed ,,	300	0	340	0	280	0	320	0
boldscraped ,,	220	0	290	0	200	0	280	0
sorts ...... ,,	100	0	200	0	100	0	190	0
dark ...... ,,	75	0	100	0	80	0	110	0
Arabic, E. I., fine pale picked .. ,,	77	0	85	0	78	0	84	0
srts, gd. to fin ,,	65	0	76	0	70	0	76	0
garblings.. ,,	40	0	60	0	40	0	60	0
Turkey, pick. gd to fin. ,,	170	0	210	0	180	0	220	0
second & inf. ,,	90	0	160	0	90	0	175	0
in sorts .. ,,	75	0	100	0	75	0	110	0
Gedda.... ,,	38	0	44	0	33	0	45	0
Barbary, white .. ,,	80	0	85	0	80	0	110	0
brown .. ,,	70	0	75	0	74	0	78	0
Australian ...... ,,	23	0	45	0	32	0	50	0
Assafœtida, com. to gd ,,	40	0	100	0	75	0	110	0
Benjamin, 1st qual. ,,	280	0	460	0	280	0	460	0
2nd ,, ,,	140	0	220	0	140	0	220	0
3rd ,, ,,	50	0	100	0	50	0	120	0
Copal, Angola red ,,	90	0	102	0	87	6	105	0
Benguela .. ,,	90	0	102	0	100	0	110	0
Sierra Leone..per lb.	0	4	1	3	0	5	1	2
Manilla ....per cwt.	30	0	52	0	31	0	47	0
Dammar, pale .... ,,	77	0	85	0	96	0	100	0
Euphorbium ...... ,,	13	0	14	0	18	0	20	0
Galbanum .... ,,	160	0	260	0	220	0	250	0
Gamboge, pckd pipe ,,	290	0	330	0	300	0	340	0
Guaiacum ....per lb.	0	9	1	6	0	8	1	4
Kino..............per cwt.	60	0	140	0	60	0	120	0
Kowrie, rough.... ,,	44	0	51	0	46	0	00	0
scraped .. ,,	52	0	105	0	65	0	112	6
Mastic, picked......per lb.	5	6	0	0	5	0	5	9
Myrrh, gd. & fine per cwt.	190	0	233	0	200	0	260	0
sorts......	92	0	185	0	90	0	170	0
Olibanum, p. sorts	82	6	87	6	80	0	85	0
amber & ylw.	75	0	82	0	70	0	79	0
garblings .... ,,	26	0	50	0	25	0	45	0
Senegal ....per cwt.	77	6	95	0	80	0	85	0
Sandarac .... ,,	62	0	100	0	82	0	105	0
Thus.............. ,,	13	0	14	0	13	0	14	0
Tragacanth, leaf.. ,,	220	0	380	0	230	0	300	0
in sorts ,,	115	0	210	0	120	0	230	0
OILS.								
Seal, pale..........per tun	£42	10	0	0	£37	0	0	0
yellow to tinged ,,	36	0	41	0	33	0	36	0
brown........ ,,	84	0	35	0	31	0	32	0
Perm, body ...... ,,	91	0	0	0	100	0	0	0
headmatter ,,	91	0	0	0	0	0	0	0

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Oils, *continued*:—	£	s.	£	s.	£	s.	£	s.
Cod .... ,,	41	0	42	0	44	0	45	0
Whale, South Sea, pale ,,	38	0	0	0	40	0	0	0
yellow ,,	30	10	37	0	39	0	0	0
brown ,,	36	0	37	0	37	0	0	0
East India, Fish ,,	32	0	33	0	31	0	32	0
Olive, Galipoli ...... ,,	56	0	0	0	53	0	0	0
Trieste ...... ,,	51	0	0	0	51	0	52	0
Levant ...... ,,	51	0	52	0	47	0	0	0
Mogador...... ,,	52	10	0	0	40	0	0	0
Spanish ...... ,,	0	0	0	0	49	0	49	10
Sicily .... ,,	0	0	0	0	48	10	49	0
Cocoanut, Cochin.. per ton	45	0	46	0	47	10	48	0
Ceylon.. ,,	39	10	40	0	46	0	0	0
Sydney ,,	34	10	39	0	46	0	0	0
Ground Nut and Ginoelly:								
Bombay	0	0	0	0	40	0	0	0
Madras.................	43	0	0	0	0	0	40	0
Palm, fine	39	10	40	0	41	0	0	0
Linseed	32	10	0	0	30	10	0	0
Rapeseed, English, pale ..	45	10	46	0	36	10	0	0
brown........	43	0	43	10	34	0	34	10
Foreign pale....	47	0	0	0	37	0	0	0
brown........	45	10	0	0	31	10	0	0
Cottonseed	31	0	36	0	20	10	32	0
Lard....................	72	0	75	0	78	0	80	0
Tallow	35	0	0	0	35	0	0	0
Turpentine, American, cks.	30	6	31	0	31	0	0	0
Petroleum, Crude	14	0	0	0	14	0	15	0
	s.	d.	s.	d.	s.	d.	s.	d.
refined, per gall.	1	7½	1	8½	1	8½	0	0
Spirit ,,	1	0	1	1	0	8	0	9
SEEDS.	s.	d.	s.	d	s.	d.	s.	d.
Canary ....per qr.	40	0	46	0	59	0	65	0
Caraway, English per cwt.	45	0	50	0	38	0	40	0
German, &c.....	27	0	41	0	34	0	44	0
Coriander	0	0	0	0	20	0	22	0
Hemp ....per qr.	44	0	48	0	42	0	44	0
Linseed, English per qr...	0	0	0	0	65	0	72	0
Black Sea & Azof	58	9	0	0	58	6	0	0
Calcutta ,,	50	0	61	6	59	6	59	9
Bombay ,,	61	6	62	0	60	6	0	0
St. Petrsbrg. ,,	56	0	57	6	57	0	0	0
Mustard, brown..per bshl.	0	0	0	0	14	0	17	0
white.. ,,	0	0	0	0	13	0	18	0
Poppy, East India per qr.	53	6	0	0	60	0	60	6
SPICES.								
Cassia Lignea ....per cwt.	118	0	128	0	130	0	138	0
Vera .... ,,	47	0	83	0	50	0	87	6
Buds .... ,,	155	0	175	0	140	0	160	0
Cinnamon, Ceylon,								
1st quality ....per lb.	1	10	3	7	2	0	3	10
2nd do. ...... ,,	1	6	3	4	1	9	3	6
3rd do. ...... ,,	1	3	3	1	1	6	3	1
Tellicherry ...... ,,	0	0	0	0	0	0	0	0
Cloves, Penang.... ,,	0	10¾	1	0	0	10	1	0
Amboyna........ ,,	0	4½	0	5¾	0	5	0	6
Zanzibar .... ,,	0	3⅜	0	3½	0	3¼	0	4½
Ginger, Jam., fine per cwt.	100	0	200	0	90	0	195	0
Ord. to good .. ,,	35	0	100	0	35	0	80	0
African.......... ,,	25	6	0	0	27	6	0	0
Bengal .... ,,	26	0	0	0	30	0	31	0
Malabar .... ,,	23	6	0	0	0	0	0	0
Cochin .... ,,	35	0	110	0	34	0	120	0
Pepper, Blk, Malabar, per lb.	0	5½	0	0	0	5	0	6
White, Tellicherry ,,	0	9	1	5	0	10	1	6
Cayenne .... ,,	0	9	1	2½	0	4	0	8½
Mace, 1st quality ..per lb.	3	0	3	9	2	9	3	2
2nd and inferior.. ,,	2	4	2	11	1	6	2	7
Nutmegs, 73 to 60 to lb.	2	7	4	0	2	5	4	4
90 to 80 ,,	2	2	2	7	1	10	2	2
132 to 95 ,,	1	6	2	1	1	5	1	9
VARIOUS PRODUCTS.								
COCHINEAL—								
Honduras, black ..per lb.	2	8	3	10	3	1	4	3
,, silver .. ,,	2	6	3	0	2	10	3	5
,, pasty .. ,,	2	1	2	5	1	6	2	9
Mexican, black .... ,,	2	3	3	1	3	1	3	4
,, silver.... ,,	2	6	2	7	2	10	3	1
Teneriffe, black....	2	7	4	4	3	0	4	16
,, silver.... ,,	2	6	2	9	2	10	3	3
PUMICE STONE ..per ton	120	0	160	0	120	0	160	0
SOAP, Castile ....per cwt.	35	0	0	0	33	0	39	0
SPONGE, Turk. fin pkd pr lb.	12	0	16	0	12	0	14	0
Fair to good .. ,,	4	0	11	0	5	0	11	0
Ordinary...... ,,	1	0	3	6	2	0	4	0
Bahama............ ..	0	6	2	6	0	9	2	6
TERRA JAPONICA—								
Gambier .. per cwt.	16	0	17	0	16	9	17	3
Free cubes ,,	18	0	20	0	21	0	24	9
Cutch ..... ,,	22	6	23	9	29	0	30	6
WOOD, Dye, Bar ..per ton	£4	0	£4	10	£5	0	£5	10
Brazil .... ,,	0	0	0	0	0	0	0	0
Braziletto .... ,,	0	0	0	0	0	0	0	0
Cam .... ,,	17	0	24	0	28	0	32	0
Fustic, Cuba...... ,,	7	10	8	10	7	15	3	10
Jamaica .... ,,	4	0	5	10	5	5	7	0
Savanilla........ ,,	0	0	0	0	0	0	0	0
Logwood, Campeachy ,,	9	10	10	0	10	0	10	10
Honduras ...... ,,	5	0	5	10	7	5	7	10
St. Domingo .... ,,	5	0	5	10	7	0	7	5
Jamaica .... ,,	4	5	4	10	7	5	0	0
Lima, first pile.... ,,	10	0	11	0	14	0	15	0
Red Sanders...... ,,	8	0	8	15	7	0	7	10
Sapan, Bimas, &c. ,,	7	0	9	10	10	0	13	10